Video camera recorder VKR6810

Service
Service
Service

68VKR10/20
Audio/Video input adapter 22AV5120/20

Service Manual

38 994 A12

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçio

Subject to modification
(GB) 4822 726 13994
Printed in The Netherlands
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MECHANICAL PARTS

POSNR	DESCRIPTION	ORDERING CODE	
	9PIN CONN. CABLE	4822 321 21257	VFK0302
	CAMERA HOLDER	4822 395 90254	VFK0303
	Y/C SEPARATOR	4822 395 90255	VFK0304
	10PIN CONN. CABLE	4822 321 21453	VFK0312
	HEX. WRENCH (0.71MM)	4822 395 50184	VFK0305
	VHS ALIGNMENT TAPE	4822 397 30103	VFJ8125H3F
	RETAI.RING REMOV.3MM	4822 395 90259	VKF0144
	POST ADJUSTM. PLATE	4822 395 80184	VFK0191
	R. TABLE HEIGHT JIG	4822 395 90238	VFK0190
	H-POS. ADJ-FIXTURE	4822 395 90237	VFK0189
	POST ADJ.SCREWDRIVER	4822 395 50168	VFK0137
	FINE ADJ.SCREWDRIVER	4822 395 50183	VFK0157
	DIAL TORQUE GAUGE	4822 395 90232	VFK0133
	ADAP. FOR VFK0133	4822 395 90233	VFK0134
	(PLASTIC CL. ONLY)	4822 395 90235	VFK0180
	FAN TYPE TENS.GAUGE	4822 395 80208	VFK66
	HEAD CLEANING STICK	4822 395 90256	VFK27
40	TOP CASE	4822 432 60065	VKM0641
207	DOOR HINGE LEFT	4822 417 10842	VKC0222
209	DOOR HINGE RIGHT	4822 417 10841	VKC0217
215	SHOE SUPPORT	4822 403 52401	VGQ0843
243	BELT HOLDER	4822 404 60205	VMA6600
1(1)	BLIND PIECE	4822 404 60236	VJF0171
2(1)	LENS HOOD	4822 462 40904	VDW0032
3(1)	HOOD CAP	4822 462 40905	VKF0608
4(1)	COIL HOLDER	4822 256 90867	VKW0589
5(1)	COIL CHASSIS	4822 464 90246	VMK0253
6(1)	OP.C.B.A. SUPP.ANGLE	4822 404 60239	VMP0764
7(1)	FRONT CASE UNIT	4822 432 60072	VYK1064
8(1)	AWC SET KNOB	4822 410 24234	VGU2141
9(1)	IRIS KNOB	4822 413 31328	VGU2142
10(1)	AF LENS UNIT	4822 381 20088	VXP0676
11(1)	ZOOM MOTOR UNIT	4822 361 20632	VEM0233
12(1)	FILTER UNIT	4822 381 31004	VEK2598
13(1)	PICK-UP TUBE	4822 131 90096	S4161P
14(1)	PICK-UP TUBE YOKE	4822 150 10204	ELY13A401W
16(1)	BIAS LIGHT UNIT	4822 693 40058	VSQ0434
17(1)	PICK-UP TUBE SOCK.UN	4822 255 70219	VEK2343
20(1)	STRAP	4822 498 40537	VGQ0911
21(1)	IDLER GEAR	4822 522 32035	VDG0238
22(1)	IDLER GEAR SHAFT	4822 535 80732	VMS2891
23(1)	MASTER FLANGE UNIT	4822 256 80059	VDB0786
24(1)	IRIS UNIT	4822 693 50103	VXL1361
25(1)	LENS UNIT (A)	4822 381 20092	VXP0679
26(1)	FOCUS RUBBER COVER	4822 532 60998	VGQ0857
27(2)	TOP HOLDER	4822 462 71383	VKM0624
28(2)	WAVE WASHER	4822 530 80281	VMX0955
29(2)	STOPPER	4822 532 60997	VJF0326
30(2)	BOTTOM HOLDER	4822 432 60071	VKM0625
31(2)	TIGHT RING	4822 532 70271	VMX0954
32(2)	STOPPER RING	4822 530 70366	VMX0956
33(2)	FIXTURE SHAFT	4822 535 80733	VMS2980
34(2)	FIXTURE RING	4822 532 70265	VMX0852
35(2)	FRONT PANEL UNIT	4822 432 91857	VYP1532
36(2)	EYE CAP	4822 462 40849	VMG0345
37(2)	LENS (B) UNIT	4822 381 20089	VYQ0012
38(2)	LENS SPRING	4822 492 63331	VMC0157
39(2)	LENS (A) UNIT	4822 381 20093	VYK1153
40(2)	TOP CASE	4822 432 60077	VKM0651
41(2)	CRT SOCKET UNIT	4822 255 70221	VEK2452
42(2)	CRT FIXING RUBBER	4822 532 70262	VMG0339
43(2)	DEFLECTION YOKE UNIT	4822 150 10205	VEK2481
44(2)	CRT	4822 131 90095	M01JGU9WB
45(2)	BOTTOM CASE UNIT	4822 432 60067	VYK1154
46(2)	FRONT PANEL UNIT	4822 410 24766	VGQ0892
47(2)	MIRROR	4822 380 30109	VDL0045
48(2)	WIND SCREEN	4822 462 71372	VYF0658
49(2)	MICROPHONE	4822 242 30128	VSV0010
50(2)	MIC PLATE	4822 459 80323	VMA6713
51(2)	MIC ANGLE	4822 404 60197	VMA6708
53(2)	CRT MASKING	4822 451 21007	VMA6693
54(2)	INSULATOR UNIT	4822 466 30162	VXA2470
55(2)	SHAFT HOLDER	4822 532 70269	VJF0327
56(3)	UPPER CYLINDER UNIT	4822 691 20348	VEH0292
57(3)	RT TERMINAL	4822 404 60193	VJR0140
58(3)	CYLINDER UNIT	4822 691 20374	VEG0406
59(3)	LOADING BELT	4822 358 20239	VDV0154
60(3)	INTERM.PULLEY GEAR	4822 528 81033	VDG0204
61(3)	CUT WASHER	4822 532 51556	VMX0653
62(3)	DRIVE GEAR (A)	4822 522 31914	VDG0205
63(3)	DRIVE GEAR (B)	4822 522 31915	VDG0206
64(3)	DRIVE GEAR (C)	4822 522 31916	VDG0207
65(3)	EARTH HOLDER UNIT	4822 290 60572	VXS0064
66(39	CAM GEAR	4822 522 31913	VDG0202
67(3)	LOADING GEAR (C) (2)	4822 522 31918	VDG0211
68(3)	LOAD. GEAR (C)SPRING	4822 522 31919	VMB1324
69(3)	LOAD. GEAR (C) (1)	4822 522 31917	VDG0210
70(3)	SG LIMITER	4822 404 60196	VMA6551
71(3)	SECTOR GEAR UNIT	4822 522 31921	VXP0632
72(3)	BELT COVER	4822 443 61577	VMD0698
73(3)	MAIN PULLEY	4822 528 81034	VDP0992
74(3)	CAPSTAN BELT	4822 358 20241	VDV0155
75(3)	DEW SENSOR (1) UNIT	4822 218 20555	VEK2372
76(3)	DEW SENSOR (1) ANGLE	4822 404 60237	VMA6757
77(3)	DEW SENSOR (2) UNIT	4822 404 60192	VEK2361
78(3)	CASSETTE OPENER	4822 404 60222	VGQ0888
79(3)	REW ARM (A) UNIT	4822 464 50408	VXL1256
80(3)	TAKE-UP CLUTCH UNIT	4822 528 70455	VXP0648
81(3)	TAKE-UP REEL TABLE	4822 528 81038	VXR0129
82(3)	SUPPLY REEL TABLE	4822 528 81037	VXR0128
83(3)	SUPPLY CLUTCH UNIT	4822 528 70454	VXP0647
84(3)	SAFETY TAB SW. BASE	4822 464 50404	VMA6560
85(3)	SAFETY TAB SWITCH	4822 271 30423	VSH0023
86(3)	FF ARM (A9 UNIT	4822 403 52369	VXL1254
87(3)	FF ARM (B)UN. (1)	4822 403 52372	VXL1267
88(3)	REW ARM KICK ROLLER	4822 528 81035	VDP0993
89(3)	SOFT BRAKE (T) UNIT	4822 403 52374	VXZ0197
90(3)	DRIVE GEAR UNIT	4822 403 52373	VXP0637
91(3)	OPERATION FRAME	4822 464 50406	VMD0716
92(3)	GEAR COVER	4822 464 50405	VMD0697
93(3)	THRUST WASHER	4822 532 11223	VMX0388
94(3)	MAIN ROD UNIT	4822 403 52371	VXL1261
95(3)	DUMPER GEAR LEVER UN	4822 404 60229	VXL1404
96(3)	MODE SEL. SW. UNIT	4822 276 11533	VSS0125
97(3)	CAPSTAN STATOR UNIT	4822 466 61067	VEK2348
98(3)	CAPSTAN ROTOR UNIT	4822 528 81036	VXP0634
99(3)	CASSETTE UP UNIT	4822 691 20376	VXA2413
100(3)	DUMPER UNIT	4822 403 52365	VDG0214
101(3)	PRESSING SPRING	4822 492 41281	VMB1328
102(3)	LEAF SWITCH	4822 278 10083	VSH0026
103(3)	TAKE-UP PHOTO TR.C.B	4822 212 50249	VJB00B70
104(3)	SUPPLY PHOTO TR.C.B.	4822 212 50248	VJB00B69
105(3)	PHOTO TR.	4822 130 42658	PN158NV
106(3)	PHOTO HOLDER (R)	4822 256 90794	VMD0606
107(3)	PHOTO HOLDER (L)	4822 256 90795	VMD0607
108(3)	LEAF SWITCH COVER	4822 443 50637	VMD0710
109(3)	BOARD SPRING	4822 492 41283	VMB1330
110(3)	HOLDER (L) SPRING	4822 492 41282	VMB1329
111(3)	HOLDER (R) SPRING	4822 492 41285	VMB1392
112(3)	LOCK LEVER SPRING(B)	4822 492 41236	VMB1226
113(3)	LOCK LEVER (B)	4822 403 52368	VML1650
114(3)	LOCK LEVER SPRING (A	4822 492 41284	VMB1331
115(3)	LOCK LEVER (A)	4822 403 52367	VML1649
116(3)	LOCK BOARD UNIT	4822 464 50417	VXA2288
117(3)	LOCK ROLLER	4822 528 81039	VDP1000
118(3)	DEW SENSOR (1) ANGLE	4822 404 60238	VMA6769
119(3)	DRIVE ARM KICK LEVER	4822 403 52388	VML1707
120(3)	DRIVE ARM KICK LEVER	4822 492 41294	VMB1388
121(3)	HINGLE ANGLE	4822 403 52389	VMP0710
122(3)	HINGLE	4822 417 10874	VKC0210
124(4)	SUPPORTER UNIT	4822 404 60231	VXA2393
125(4)	BRAKE PLATE (1) UNIT	4822 466 81684	VXA2392
126(4)	M2 NYLON NUT	4822 505 10776	VHN0047
127(4)	P1 ROLLER	4822 532 21114	VDP1033
128(4)	P1 LIMITER PLATE	4822 404 60203	VMA6547
129(4)	P1 POST SPRING	4822 492 41293	VMB1327
130(4)	P1 BASE (1) UNIT	4822 464 50415	VXA2215
131(4)	LOADING MOTOR UNIT	4822 361 20643	VEM0240
132(3)	FRAME (1) ANGLE UNIT	4822 466 81695	VXA2350
133(4)	AUDIO SUPPORT ANGLE	4822 404 60225	VKC0248
134(4)	FE HEAD	4822 218 20556	VBS0021
135(4)	FE HEAD BASE	4822 403 52382	VMD0694
136(4)	TENSION ADJUST PIECE	4822 403 52383	VMD0707
137(4)	TENSION ARM UNIT	4822 464 50421	VXL1262
138(4)	BAND RELEASE ARM	4822 403 52387	VML1641
139(4)	TENSION BAND UNIT	4822 463 11001	VXZ0199
140(4)	TENSION SPRING	4822 492 41291	VMB1315
141(4)	SOFT BR. LEV. (S) UN	4822 403 10238	VXL1264
142(4)	SOFT BRAKE LEVER SPR	4822 492 41289	VMB1314
143(4)	LOADING (A) GEAR	4822 522 31923	VDG0208
144(4)	LOADING (B) GEAR	4822 522 31924	VDG0209
145(4)	TEN. KICK LEVER UNIT	4822 464 50419	VXL1251
146(4)	EJECT LEVER (A) UNIT	4822 403 52395	VXL1275
147(4)	EJECT LEVER (B) UNIT	4822 403 52396	VXL1276
148(4)	P2 ADJUST PLATE	4822 403 52379	VMA6542
149(4)	SUPPLY POST STOPPER	4822 464 50413	VMD0701
150(4)	V STOPPER BASE	4822 464 50411	VMD0699
151(4)	TAKE-UP POST STOPPER	4822 464 50412	VMD0700
152(4)	LOADING GUIDE S1	4822 403 52384	VMD0721
153(4)	LOADING GUIDE S2	4822 403 52385	VMD0722
154(4)	TAPE PROTECTOR	4822 403 52386	VMD0769
155(4)	SUP. SH. HOLD (1) UN	4822 464 50416	VXA2221
156(4)	ROLLER POST (S) UNIT	4822 535 70921	VZJ0036C
157(4)	CONNECTION TIE UNIT	4822 403 52391	VXA2231
158(4)	SUP.SH.HOLD.ANGLE UN	4822 403 52392	VXA2256
159(4)	CONNECTION ROD	4822 404 60204	VMM0144
160(4)	TAKE-UP SH.HOLD.ANGL	4822 404 60202	VMA6546
161(4)	T SHAFT HOLDER UNIT	4822 403 52394	VXA2360
162(4)	LOADING GUIDE T UNIT	4822 403 52393	VXA2257
163(4)	RING GUIDE SLEEVE UN	4822 532 51661	VMX0784
164(4)	RING GUIDE ROLLER	4822 532 51658	VDP0996
165(4)	RING GUIDE SLEEVE(L)	4822 532 51659	VMS2692
166(4)	LOADING SPRING	4822 492 41292	VMB1319
167(4)	LOAD. RING S (1) UN.	4822 522 31926	VXA2253
168(4)	LOAD. RING T (1) UN.	4822 522 31925	VXA2223
169(4)	LOAD. RINK T UNIT	4822 403 52411	VXA2232
170(4)	RING PRES. ARM (1)UN	4822 403 52416	VXL1270
171(4)	RING PRES.ARM SPRING	4822 492 41299	VMB1323
172(4)	TAPE COVER (A)	4822 403 52405	VMD0713
173(4)	CHASSIS SHIELD PANEL	4822 403 52402	VMA6552
174(4)	BRAKE (L) UNIT	4822 466 40184	VXZ0206
175(4)	BRAKE (R) UNIT	4822 466 40185	VXZ0207
176(4)	P1 COLLAR	4822 532 51701	VMX0876
177(4)	LED ANGLE	4822 403 52403	VMA6694
178(4)	POST SLEEVE (B)	4822 325 60299	VMS2888

179(4)	P4 POST SLEEVE	4822 535 70855	VMS2693
180(4)	P5 POST SLEEVE	4822 535 70856	VMS2694
181(4)	P4/P5 SPRING	4822 492 41298	VMB1322
182(4)	AC HEAD ADJ. SCREW	4822 502 11954	VHD0144
183(4)	A/C HEAD ADJ. SPRING	4822 492 41297	VMB1321
184(4)	A/C HEAD	4822 249 20067	VBR0087
185(4)	M3 NYLON NUT	4822 505 10737	VHN0023
186(4)	A/C HEAD ARM	4822 403 52406	VML1637
187(4)	A/C HEIGHT SPRING	4822 492 41296	VMB1320
188(4)	PINCH ROL.PRES.ARM U	4822 403 52414	VXL1265
189(4)	PI.ROL.PRES.ARM (C)U	4822 403 52413	VXL1249
190(4)	PINCH ROL. SPR.PRES.	4822 492 41302	VMB1326
191(4)	REW ARM SPRING	4822 492 41295	VMB1318
192(4)	REW ARM BASE (1) UNI	4822 403 52415	VXL1269
193(4)	REW ARM KICK ROLLER	4822 528 81035	VDP0993
194(4)	PINCH LEVER	4822 403 52407	VML1640
195(4)	PINCH LEVER SPRING	4822 492 41301	VMB1325
196(4)	PRES.ROL. LEVER (1)	4822 403 40201	VXL1329
197(4)	F2 CAP	4822 462 40808	VGQ0842
198(4)	LED ANGLE (B)	4822 403 52404	VMA6695
199(4)	THRUST BEARING	4822 520 20395	VXD0098
200(4)	CAPSTAN HOUSING UNIT	4822 403 52412	VXD0093
201(4)	DUST SEAL	4822 462 40812	VMX0775
202(4)	ADJUST SCREW	4822 502 12017	VHD0204
203(4)	ADJUST NUT	4822 505 10753	VHN0039
204(4)	ROLLER POST (T) UNIT	4822 535 70919	VXJ0036A
205(4)	PRESSURE LEVER UNIT	4822 403 52417	VXL1327
206(4)	PRESSURE LEVER SPRIN	4822 492 41304	VMB1393
208(5)	OPERATION DOOR	4822 443 50645	VKF0551
210(5)	BOTTOM CASE UNIT	4822 432 60066	VKM0631
210(5)	BOTTOM CASE	4822 432 60076	VKM0643
211(5)	DOOR SUPP.PIECE (L)	4822 464 50425	VKC0211
212(5)	DOOR SUPP.PIECE (R)	4822 464 50424	VKC0202
213(5)	SHOE SCREW	4822 502 12013	VHD0184
214(5)	SHOE SPRING	4822 492 41305	VMC0116
216(5)	SHOE	4822 464 50427	VMA6562
217(5)	GRIP CASE (1) UNIT	4822 466 91671	VYH0072
217(5)	GRIPCASE UNIT	4822 466 91687	VYH0070
218(5)	BELT ANGLE	4822 404 60227	VMP0788
218(5)	BATTERY STOPPER KNOB	4822 410 10089	VGU2429
220(5)	BATTERY STOPPER	4822 403 52398	VGQ0802
221(5)	BATTERY STOP. SPRING	4822 492 41303	VMB1359
222(5)	BAT. STOP.SUPP. ANGL	4822 464 50428	VMA6601
223(5)	BATT. SUPPORT PLATE	4822 464 50426	VKF0581
224(5)	BATTERY CATCHER	4822 290 80645	VJF0267
225(5)	E.V.F.SUPP. ANGLE	4822 403 52408	VMP0554
226(5)	GEAR COVER	4822 464 50429	VMA6678
227(5)	CLAMP	4822 417 50194	VJF0285
228(5)	GRIP SEPARATE PIECE	4822 466 91676	VKF0676
229(5)	BATTERY ANGLE	4822 290 80646	VMP0675
230(5)	BARRIER(B)	4822 466 81696	VMZ0735
231(5)	MULTI CONN. FRAME	4822 464 50431	VMD0717
232(5)	BOARD SUPP.ANGLE (A)	4822 464 50433	VMP0595
233(5)	FRAME (3) UNIT	4822 464 50432	VXK0731
234(5)	MULTI CONN. UNIT	4822 267 60171	VEK2562
235(5)	FUSE 2.0A/250V	4822 253 20023	XBA2C20TB0
236(5)	EJECT BUTTON UNIT	4822 410 24428	VXU0584
237(5)	OPERATION BOARD UNIT	4822 214 31229	VXU0437
238(5)	TRACKING KNOB	4822 412 20037	VGU2430
239(5)	TOP CASE UNIT	4822 432 60068	VYK1199
239(5)	TOP CASE UNIT	4822 432 60078	VYK1169
241(5)	CASSETTE COVER	4822 691 20375	VGP1340
241(5)	CASSETTE COVER	4822 691 20385	VGP1357
242(5)	CASSETTE COVER CAP	4822 462 40811	VMG0333
244(5)	POWER BUTTON	4822 411 61192	VGU0471
245(5)	POWER/ST-BY BUT.ANGL	4822 464 50434	VMP0713
246(5)	TAPE COVER (B)	4822 443 50648	VMD0714
247(5)	ZOOM SWITCH HOLDER	4822 256 90826	VGQ0864
248(5)	ZOOM SWITCH COVER	4822 410 50155	VGU2367
249(5)	GRIP BELT UNIT	4822 498 30129	VYC0127
249(5)	GRIP BELT UNIT	4822 498 30126	VYC0124
250(5)	GRIP BELT HOOK	4822 498 70073	VGQ0787
251(5)	HOOK COVER	4822 498 70072	VGF0166
252(5)	OPERATION PLATE	4822 459 80318	VGH0768
253(5)	CLAMP	4822 404 60223	VJF0290
254(5)	ADJUST CAP	4822 462 40903	VKF0613
255(5)	POWER BUTTON SPRING	4822 492 41303	VMB1359
256(5)	HANDLE FIXTURE ANGLE	4822 404 60228	VMP0793
260(6)	FAN BAG KIT	4822 736 50965	VQF1647
260(6)	FAN BAG KIT	4822 736 51032	VQF1671
261(6)	CUSHION (TOP)	4822 600 70255	VPN1314
262(6)	CUSHION (BUTTOM)	4822 600 70256	VPN1315
263(6)	PACKING CASE	4822 600 70251	VPG2494
270(6)	HANDLE UNIT	4822 310 30699	VYH0052
272(6)	AV CONNECTOR	4822 218 20507	VSQ0443
273(6)	EARPHONE	4822 242 40084	VBE0005
300(2)	WASHER	4822 532 51698	VMX0941
301(2)	WAVE WASHER	4822 532 51699	VMX0942
302(4)	A/C HEAD C.B.	4822 212 50247	VJB00E64
303(5)	BARRIER (C)	4822 403 52409	VMZ0690
304(4)	SENSOR C.B.	4822 212 50246	VJB00E41
305(4)	LED HOLDER	4822 255 40391	VMD0465
306(4)	SENSOR LED	4822 130 32878	LN59NV
307(1)	ENCODER COVER	4822 462 40902	VDW0028
308(1)	SLIDING UNIT	4822 693 50101	VEK2534
309(1)	AF LENS COVER	4822 404 60233	VGQ0859
310(1)	LENS ANGLE (1)	4822 404 60226	VMP0762
311(1)	LED LEAD WIRE HOLDER	4822 256 90827	VJF0312
312(1)	LED ADJUST UNIT	4822 693 50102	VXA2401
313(1)	NUT PLATE	4822 466 81707	VMP0761
314(1)	C.B.SUPPORT ANGLE	4822 404 60234	VMP0757
315(1)	LENS ANGLE (2)	4822 466 81683	VMP0763
316(1)	FOCUS MOTOR	4822 361 20633	VEM0238
317(1)	MOTOR SPACE	4822 532 51697	VMX0884
318(1)	MOTOR SPACE	4822 255 40469	VMX0815
319(1)	PSD LEAD WIRE HOLDER	4822 256 90831	VJF0313
320(1)	PSD HOLDER	4822 256 90866	VJF0305
321(1)	SENSOR ADJUST UNIT	4822 693 50104	VXA2400
322(1)	SENSOR LENS UNIT	4822 381 31005	VXP0677
323(1)	ENC.LEAD WIRE HOLDER	4822 256 90828	VJF0316
324(1)	AWT SET SWITCH	4822 411 61188	VGU2497
325(1)	AF/MF SW KNOB	4822 411 61187	VGU2494
326(2)	BRAKE SPRING	4822 492 63329	VMC0156
400(5)	SCREW	4822 502 12021	VHD0213
401(1)	SCREW	4822 502 12198	VHD0230
402(1)	SCREW	4822 502 12199	VHD0233
403(1)	SCREW	4822 502 12201	VHD0234
404(1)	SCREW	4822 502 12202	VHD0235
405(1)	SCREW	4822 502 12203	VHD0238
406(1)	SCREW	4822 502 12204	VHD0239
407(1)	SCREW	4822 502 12205	VHD0240
408(1)	SCREW	4822 502 12206	VHD0241
409(1)	SCREW	4822 502 12207	VHD0243
410(1)	SCREW	4822 502 12208	VHD0244
411(1)	SCREW	4822 502 12209	VHD0246
52-1(2	CIRCUIT BOARD	4822 212 50251	VJB04123
52-2(2	MIC/EAR JACK	4822 267 10166	VJJ0098
52-6(2	DIODE	4822 130 33284	MA4705

ELECTRICAL PARTS

POSNR	DESCRIPTION	ORDERING CODE	
	PRE AMP C.B.A.	4822 212 50244	VEP25007A
	CAMERA MAIN C.B.A.	4822 212 50242	VEP23042A
	SYNC SUB C.B.A.	4822 212 50243	VEP23043A
	CAMERA SENSOR C.B.A.	4822 212 50239	VEP20187A
	CAMERA OP. C.B.A.	4822 212 50245	VEP26041A
	ZOOM C.B.A.	4822 212 50241	VEP20188A
	E.V.F. C.B.A.	4822 212 50205	VEP00F17C
	HIGH VOLTAGE C.B.A.	4822 212 50206	VEP00F18C
	CONNECTOR C.B.	4822 212 50252	VJB00F19
	LED C.B.	4822 212 50253	VJB00F20
	AUTO FOCUS C.B.A.	4822 212 50231	VEP00F61A
	AUTO FOCUS SW C.B.	4822 214 31301	VJB26044
	IR LED C.B.	4822 212 50255	VJB20184
	PSD C.B.	4822 212 50254	VJB20183
	MAIN C.B.A.	4822 212 50238	VEP06336A
	LUM./CHR. C.B.A.	4822 212 50232	VEP03297A
	HEAD AMP C.B.A.	4822 212 50234	VEP05073B
	AUDIO C.B.A.	4822 212 50233	VEP04131B
	OPERATION (I) C.B.A.	4822 212 50235	VEP06311A
	OP. (II) C.B.A.	4822 212 50236	VEP06312A
	OP. (III) C.B.A.	4822 212 50237	VEP06314A
	MICRO SW C.B.	4822 212 50222	VJB00F03
	EJECT C.B.	4822 212 50221	VJB00E39
	FUSE CONNCETION C.B.	4822 214 31299	VJB00G18
	START/STOP C.B.	4822 214 31306	VJB26042
	MECHANISM CON. C.B.	4822 214 31297	VJB00F70
	FE HEAD C.B.	4822 214 31298	VJB00F71
	REM. CON. JACK C.B.	4822 212 50219	VJB00F66

CAMERA MAIN C.B.A.

INTEGRATED CIRCUITS

POSNR	DESCRIPTION	ORDERING CODE	
IC 202	I.C. AN2110S	4822 209 82771	AN2110S
IC 201	I.C. NJM3414M	4822 209 83185	NJM3414M
IC 202	I.C. AN2310S	4822 209 82773	AN2310S
IC 302	I.C. AN2320S	4822 209 82774	AN2320S
IC 303	I.C. AN2360S	4822 209 83177	AN2360S
IC 304	I.C. AN2210S	4822 209 82772	AN2210S
IC 401	I.C. AN2431	4822 209 83918	AN2431
IC 402	I.C. MN8037S	4822 209 82778	MN8037S
IC 403	I.C. AN6552S	4822 209 80611	AN6552S
IC 601	I.C. NJM4556MB	4822 209 82782	NJM4556MB
IC 602	I.C. NJM4558M	4822 209 83186	NJM4558M
IC 901	I.C. UPD7507G613	4822 209 83548	UPD7507G613
IC 902	I.C. AN6912S	4822 209 83008	AN6912S

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 301	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 302	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 303	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 304	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 305	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 306	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 307	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 308	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 309	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 310	TRANSISTOR 2SA1022	4822 130 42659	2SA1022

Q 311	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 312	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 313	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 314	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 315	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 401	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 402	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 403	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 404	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 405	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 406	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 407	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 408	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 409	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 410	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 411	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 412	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 413	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 414	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 415	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 601	TRANSISTOR 2SB819	4822 130 42339	2SB819
Q 602	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 603	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 604	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 605	TRANSISTOR 2SD1051	4822 130 42667	2SD1051
Q 606	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 607	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 608	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 609	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 610	TRANSISTOR 2SC1567A	5322 130 44658	2SC1567A
Q 611	TRANSISTOR 2SD1051	4822 130 42667	2SD1051
Q 612	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 613	TRANSISTOR 2SB819	4822 130 42339	2SB819
Q 614	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 615	TRANSISTOR 2SC1567A	5322 130 44658	2SC1567A
Q 616	TRANSISTOR 2SD601A	4822 130 42671	2SD601A
Q 617	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 618	TRANSISTOR 2SB970	4822 130 42664	2SB970
Q 619	TRANSISTOR 2SD1051	4822 130 42667	2SD1051
Q 620	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 621	TRANSISTOR 2SD814	4822 130 42673	2SD814
Q 622	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 623	TRANSISTOR 2SB792	4822 130 42663	2SB792
Q 624	TRANSISTOR 2SD814	4822 130 42673	2SD814
Q 625	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 626	TRANSISTOR 2SD601A	4822 130 42671	2SD601A
Q 628	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 629	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 630	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 631	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 633	TRANSISTOR 2SD601A	4822 130 42671	2SD601A
Q 901	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 902	TRANSISTOR 2SB970	4822 130 42664	2SB970

DIODES

POSNR	DESCRIPTION	ORDERING CODE	
D 201	DIODE MA151K	4822 130 32635	MA151K
D 301	DIODE MA151K	4822 130 32635	MA151K
D 302	DIODE OA90	4822 130 30219	OA90
D 303	DIODE MA700	4822 130 33013	MA700
D 401	DIODE MA151WA	4822 130 32866	MA151WA
D 402	DIODE MA151K	4822 130 32635	MA151K
D 403	DIODE MA345B	4822 130 33026	MA345B
D 404	DIODE MA345B	4822 130 33026	MA345B
D 601	DIODE MA151K	4822 130 32635	MA151K
D 602	DIODE MA3075	4822 130 33289	MA3075
D 603	DIODE MA151K	4822 130 32635	MA151K
D 604	DIODE 10E2	4822 130 31087	10E2
D 605	DIODE MA152K	4822 130 32867	MA152K
D 606	DIODE MA162A	4822 130 33287	MA162A
D 607	DIODE MA151K	4822 130 32635	MA151K
D 608	DIODE MA151K	4822 130 32635	MA151K
D 901	DIODE MA151K	4822 130 32635	MA151K

RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
RA 901	RADER RESISTOR	4822 116 10037	EXBM16D70CG
RA 902	RADER RESISTOR	4822 116 10037	EXBM16D70CG

CAPACITORS

POSNR	DESCRIPTION	ORDERING CODE	
C 442	TRIMER 100V 30P	4822 125 50303	ECRJA030E11

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 201	COIL 100UH	4822 157 52485	VLQ0163K101
L 202	COIL 330UH	4822 157 52413	VLQ0133K331
L 301	COIL 15UH	4822 157 10212	VLQ0163K150
L 302	COIL 15UH	4822 157 10212	VLQ0163K150
L 303	COIL 33UH	4822 157 52486	VLQ0163K330
L 304	COIL 33UH	4822 157 52486	VLQ0163K330
L 305	COIL 100UH	4822 157 52485	VLQ0163K101
L 306	COIL 33UH	4822 157 52486	VLQ0163K330
L 401	COIL 33UH	4822 157 52486	VLQ0163K330
L 402	COIL 33UH	4822 157 52486	VLQ0163K330
L 403	COIL 33UH	4822 157 52486	VLQ0163K330
L 404	COIL 100UH	4822 157 52485	VLQ0163K101
L 405	COIL 33UH	4822 157 52486	VLQ0163K330
L 406	COIL 1UH	4822 157 52483	EIC7QE008B
L 407	COIL 33UH	4822 157 52486	VLQ0163K330
L 408	COIL 100UH	4822 157 52485	VLQ0163K101
L 601	COIL 56UH	4822 157 52484	ELC04D001
L 602	COIL 22MH	4822 157 52294	EIR7QF005B
L 603	COIL 22MH	4822 157 52294	EIR7QF005B
L 901	COIL 100UH	4822 157 52485	VLQ0163K101

DELAY LINE

POSNR	DESCRIPTION	ORDERING CODE	
DL 301	D.L. EFDMT645L83F	4822 320 40122	EFDMT645L83F
DL 302	D.L. ELB4R002	4822 320 40124	ELB4R002
DL 303	D.L. ELB4Q006	4822 320 40123	ELB4Q006

FILTERS

POSNR	DESCRIPTION	ORDERING CODE	
FL 202	FILTER VLF0378	4822 154 70036	VLF0378
FL 301	FILTER ELB4Q007	4822 154 70029	ELB4Q007
FL 302	FILTER ELB4T001	4822 154 70035	ELB4T001
FL 303	FILTER ELB4Q009	4822 154 70031	ELB4Q009
FL 401	FILTER ELB4Q020	4822 242 71414	ELB4Q020

VARIABLE RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
VR 201	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 202	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 203	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 205	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 205	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 301	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 302	V.R. 500	4822 100 10989	EVM6QSW00B52
VR 303	V.R. 500	4822 100 10989	EVM6QSW00B52
VR 304	V.R. 1K	4822 100 10983	EVM6QSW00B13
VR 306	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 307	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 308	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 309	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 310	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 311	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 312	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 313	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 314	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 315	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 316	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 317	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 318	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 319	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 320	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 321	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 322	V.R. 100K	4822 100 10985	EVM6QSW00B15
VR 323	V.R. 100K	4822 100 10985	EVM6QSW00B15
VR 324	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 325	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 326	V.R. 1K	4822 100 10983	EVM6QSW00B13
VR 403	V.R. 20K	4822 100 10987	EVM6QSW00B24
VR 404	V.R. 1K	4822 100 10983	EVM6QSW00B13
VR 405	V.R. 1K	4822 100 10983	EVM6QSW00B13
VR 406	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 407	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 408	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 409	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 410	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 411	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 412	V.R. 10K	4822 100 10984	EVM6QSW00B14
VR 413	V.R. 5K	4822 100 10991	EVM6QSW00B53
VR 414	V.R. 5K	4822 100 10991	EVM6QSW00B53
VR 415	V.R. 1K	4822 100 10983	EVM6QSW00B13
VR 601	V.R. 2K	4822 100 10882	EVML4GA00B23
VR 602	V.R. 20K	4822 100 10987	EVM6QSW00B24
VR 603	V.R. 200K	4822 100 10988	EVM6QSW00B25
VR 604	V.R. 2M	4822 100 10884	EVML4GA00B26
VR 605	V.R. 100	4822 100 10982	EVM6QSW00B12
VR 606	V.R. 2K	4822 100 10986	EVM6QSW00B23
VR 607	V.R. 20K	4822 100 10883	EVML4GA00B24

VR 608	V.R. 1K	4822 100 10983	EVM6QSW00B13
VR 609	V.R. 50K	4822 100 10992	EVM6QSW00B54
VR 610	V.R. 5.6K	4822 100 10885	EVM33GA00BV6
VR 611	V.R. 2M	4822 100 10884	EVML4GA00B26
VR 612	V.R. 2K	4822 100 10882	EVML4GA00B23
VR 901	V.R. 100K	4822 100 10985	EVM6QSW00B15
VR 902	V.R. 100K	4822 100 10985	EVM6QSW00B15

THERMISTOR

POSNR	DESCRIPTION	ORDERING CODE	
TH 601	THERM. ERTD2FCL101S	4822 116 40085	ERTD2FCL101S

TRANSFORMER

POSNR	DESCRIPTION	ORDERING CODE	
E 601	TRANSFORMER F.B.T.	4822 148 80283	ETF14L3B

CRYSTAL OSCILLATOR

POSNR	DESCRIPTION	ORDERING CODE	
X 401	CR. OS. VSX0114	4822 242 71196	VSX0114

SYNC SUB C.B.A.

INTEGRATED CIRCUITS

POSNR	DESCRIPTION	ORDERING CODE	
IC 701	I.C. MN6160PBS	4822 209 82777	MN6160PBS

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 701	TRANSISTOR 2SD601	4822 130 42669	2SD601

CAMERA SENSOR C.B.A.

INTEGRATED CIRCUITS

POSNR	DESCRIPTION	ORDERING CODE	
IC 501	I.C. NJM2902M	4822 209 83558	NJM2902M
IC 502	I.C. VCR0122	4822 209 83549	VCR0122

RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
R 502	RESISTOR VRE0022	4822 113 80381	VRE0022
R 512	RESISTOR VRE0023	4822 113 80382	VRE0023
R 513	RESISTOR VRE0023	4822 113 80382	VRE0023

VARIABLE RESISTERS

POSNR	DESCRIPTION	ORDERING CODE	
VR 501	VAR. RES. 2K	4822 100 10986	EVM6QSW00B23
VR 502	VAR. RES. 10K	4822 100 10984	EVM6QSW00B14

COLOUR SENSOR

POSNR	DESCRIPTION	ORDERING CODE	
PD 501	PHOTO TRANSISTOR	4822 130 42807	PN1361

CAMERA OPERATION C.B.A.

VARIABLE RESISTOR

POSNR	DESCRIPTION	ORDERING CODE	
VR 02	VAR. RES. 10K	4822 100 10899	VRV0038

SWITCHES

POSNR	DESCRIPTION	ORDERING CODE	
SW 01	AWT SW	4822 277 21056	VSS0143
SW 02	AWC SET SW	4822 277 10842	VSP0152

ZOOM C.B.A.

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 801	TRANSISTOR 2SB641	4822 130 42251	2SB641
Q 802	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 803	TRANSISTOR 2SB641	4822 130 42251	2SB641
Q 804	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 805	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 806	TRANSISTOR 2SD636	4822 130 41605	2SD636

THERMISTOR

POSNR	DESCRIPTION	ORDERING CODE	
TH 801	THERM. ERTD2FHK202S	4822 116 40086	ERTD2FHK202S

SWITCHES

POSNR	DESCRIPTION	ORDERING CODE	
SW 802	REC REV SW	4822 276 11403	EVQQS205K
SW 803	ZOOM SW	4822 277 21054	VSP0148
SW 804	ZOOM SW	4822 277 21054	VSP0148

E.V.F. C.B.A.

INTEGRATED CIRCUIT

POSNR	DESCRIPTION	ORDERING CODE	
SW 101	I.C. AN2510S	4822 209 82776	AN2510S

RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
R 103	FUSE 10	4822 111 30853	ERD2FCG100

VARIABLE RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
VR 101	VAR. RES. 200	4822 100 10897	EVNB1AA00B22
VR 102	VAR. RES. 5K	4822 100 10898	EVNB1AA00B53

COIL

POSNR	DESCRIPTION	ORDERING CODE	
L 101	COIL VEK2451	4822 150 10205	VEK2451

IC PROTECTOR

POSNR	DESCRIPTION	ORDERING CODE	
CP 101	IC PRO. VSF0015A04	4822 252 60103	VSF0015A04

THERMISTOR

POSNR	DESCRIPTION	ORDERING CODE	
TH 101	THER. VRT0012	4822 116 40087	VRT0012

THERMAL FUSE

POSNR	DESCRIPTION	ORDERING CODE	
TF 101	THER. FUSE VSF0044	4822 252 20138	VSF0044

HIGH VOLTAGE C.B.A.

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 201	TRANSISTOR 2SD763	4822 130 41351	2SD763
Q 202	TRANSISTOR 2SD958	4822 130 42674	2SD958
Q 203	TRANSISTOR 2SA564	4822 130 40941	2SA564

DIODES

POSNR	DESCRIPTION	ORDERING CODE	
D 201	DIODE MA150	4822 130 31918	MA150
D 202	DIODE MA162	4822 130 33286	MA162
D 203	DIODE V06C	4822 130 30877	V06C
D 204	DIODE V11J	4822 130 32876	V11J

VARIABLE RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
VR 201	VAR. RES. 2.2M	4822 100 10902	VRV0040B225
VR 202	VAR. RES. 470K	4822 100 10903	VRV0040B474
VR 203	VAR. RES. 2.2K	4822 100 10901	VRV0040B222

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 201	COIL 700UH	4822 154 70038	VLQ0175
L 202	COIL 100UH	4822 154 70039	VLQ0176

TRANSFORMER

POSNR	DESCRIPTION	ORDERING CODE	
T 201	TRANSFORMER F.B.T.	4822 148 80265	VLT0248

IC PROTECTOR

POSNR	DESCRIPTION	ORDERING CODE	
CP 201	IC PROT. VSF0015A04	4822 252 60103	VSF0015A04

TEMPERATURE FUSE

POSNR	DESCRIPTION	ORDERING CODE	
TF 201	TEMP. FUSE VSF0040	4822 252 20135	VSF0040

LED C.B.

DIODE

POSNR	DESCRIPTION	ORDERING CODE	
D 301	DIODE LED	4822 130 32864	LN251RPP.WE

AUTO FOCUS C.B.A.

INTEGRATED CIRCUITS

POSNR	DESCRIPTION	ORDERING CODE	
IC 1	I.C. AN6552S	4822 209 80611	AN6552S
IC 2	I.C. AN6552S	4822 209 80611	AN6552S
IC 3	I.C. AN2581S	4822 209 83541	AN2581S
IC 4	I.C. AN78L05	4822 209 83543	AN78L05
IC 5	I.C. AN1324NS	4822 209 83539	AN1324NS
IC 6	I.C. NJM2902M	4822 209 83558	NJM2902M
IC 7	I.C. MN1551VXNS	4822 209 83557	MN1551VXNS
IC 8	I.C. AN6914S	4822 209 83555	AN6914S

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 1	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 3	TRANSISTOR 2SD1742	4822 130 43524	2SD1742
Q 4	TRANSISTOR 2SD602	4822 130 42672	2SD602
Q 5	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 6	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 10	TRANSISTOR 2SD602	4822 130 42672	2SD602
Q 11	TRANSISTOR 2SD973	4822 130 42577	2SD973
Q 12	TRANSISTOR 2SB793	4822 130 43523	2SB793
Q 13	TRANSISTOR 2SB970	4822 130 42664	2SB970
Q 16	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 17	TRANSISTOR 2SD601	4822 130 42669	2SD601
QR 7	COM. PARTS UN2121	4822 209 83551	UN2121
QR 8	COM. PARTS UN2121	4822 209 83551	UN2121
QR 9	COM. PARTS UN2221	4822 209 83552	UN2221
QR 10	COM. PARTS 2SD602	4822 130 42672	2SD602
QR 14	COM. PARTS UN2213	4822 111 90815	UN2213
QR 18	COM. PARTS UN2213	4822 111 90815	UN2213

DIODE

POSNR	DESCRIPTION	ORDERING CODE	
D 1	DIODE MA151	4822 130 33285	MA151

VARIABLE RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
VR 1	VAR. RES. 10K	4822 100 10845	EVN3ACA00B14
VR 2	VAR. RES. 10K	4822 100 10845	EVN3ACA00B14
VR 3	VAR. RES. 1K	4822 100 10776	EVN3ACA00B13
VR 4	VAR. RES. 20K	4822 100 10846	EVN3ACA00B24

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 1	COIL 330UH	4822 157 51994	VLQEL05F331K
L 2	COIL 100UH	4822 157 51975	VLQEL05F101K

CRYSTAL OSCILLATOR

POSNR	DESCRIPTION	ORDERING CODE	
X 1	CRYSTAL	4822 157 52414	VSX0155

AUTO FOCUS SW C.B.

SWITCHES

POSNR	DESCRIPTION	ORDERING CODE	
SW 1	SWITCH VSS0134	4822 276 11715	VSS0134
SW 2	SWITCH EVQQSU05G	4822 276 11593	EVQQSU05G

IR LED C.B.

DIODE

POSNR	DESCRIPTION	ORDERING CODE	
	DIODE LED	4822 130 33291	VLL0036

PSD

POSNR	DESCRIPTION	ORDERING CODE	
PD 501	PSD PN1361	4822 130 42807	PN1361

MAIN C.B.A.

INTEGRATED CIRCUITS

POSNR	DESCRIPTION	ORDERING CODE	
IC1001	I.C. BA6149LS	4822 209 82947	BA6149LS
IC1002	I.C. UN102	4822 209 83188	UN102
IC6001	I.C. AN6914S	4822 209 83555	AN6914S
IC6002	I.C. MN1534VXQ	4822 209 83544	MN1534VXQ
IC6003	I.C. MN4066BS	4822 209 83545	MN4066BS
IC6004	I.C. AN6660	4822 209 83542	AN6660
IC6005	I.C. MN4503BS	4822 209 11228	MN4503BS
IC6006	I.C. MN1237A	4822 209 83183	MN1237A
IC2001	I.C. MN6179VBES	4822 209 83546	MN6179VBES
IC2002	I.C. AN3792S	4822 209 83919	AN3792S
IC2003	I.C. AN6562S	4822 209 83921	AN6562S
IC2004	I.C. AN6562S	4822 209 83921	AN6562S
IC2005	I.C. TA7745P	4822 209 83187	TA7745P
IC2006	I.C. AN3821K	4822 209 82956	AN3821K
IC2007	I.C. UPC1542AG	4822 209 83547	UPC1542AG

DIODES

POSNR	DESCRIPTION	ORDERING CODE	
D 1001	DIODE MA151K	4822 130 32635	MA151K
D 1002	DIODE MA306ZM	4822 130 33288	MA306ZM
D 2001	DIODE MA151WK	4822 130 31742	MA151WK
D 2002	DIODE MA151K	4822 130 32635	MA151K
D 2003	DIODE MA153	4822 130 32868	MA153
D 2004	DIODE MA151K	4822 130 32635	MA151K
D 2005	DIODE MA151WK	4822 130 31742	MA151WK
D 2006	DIODE MA151K	4822 130 32635	MA151K
D 2007	DIODE MA153	4822 130 32868	MA153
D 2008	DIODE MA153	4822 130 32868	MA153
D 6001	DIODE MA151K	4822 130 32635	MA151K
D 6005	DIODE MA3075M	4822 130 32874	MA3075M
D 6006	DIODE MA3068H	4822 130 33012	MA3068H
D 6007	DIODE MA151WK	4822 130 31742	MA151WK
D 6008	DIODE MA151WA	4822 130 32866	MA151WA
D 6009	DIODE MA151WA	4822 130 32866	MA151WA
D 6010	DIODE MA151WA	4822 130 32866	MA151WA
D 6011	DIODE MA151WA	4822 130 32866	MA151WA
D 6012	DIODE MA151WA	4822 130 32866	MA151WA
D 6013	DIODE MA151K	4822 130 32635	MA151K
D 6014	DIODE MA151K	4822 130 32635	MA151K
D 6015	DIODE MA151K	4822 130 32635	MA151K
D 6017	DIODE MA151K	4822 130 32635	MA151K
D 6019	DIODE MA151WA	4822 130 32866	MA151WA
D 6020	DIODE MA151WA	4822 130 32866	MA151WA

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 1001	COIL ELC08D011	4822 157 52297	ELC08D011
L 1002	COIL ELC08D010	4822 157 52296	ELC08D010
L 1003	COIL 47 UH	4822 157 52157	VLQ0128
L 1004	COIL 47 UH	4822 157 52157	VLQ0128
L 1005	COIL 400 UH	4822 157 52298	ELC08D015
L 1006	COIL 290 UH	4822 157 52158	VLQ0129
L 1007	COIL 290 UH	4822 157 52158	VLQ0129
L 1008	COIL 47 UH	4822 157 52157	VLQ0128
L 6001	COIL 100UH	4822 157 51975	VLQEL05F101K
L 6002	COIL 100UH	4822 157 51975	VLQEL05F101K

CRYSTAL OSCILLATOR

POSNR	DESCRIPTION	ORDERING CODE	
X 1001	CRY. OSC. VSX0136	4822 242 70966	VSX0136
X 6001	CRY. OSC. VSX0086	4822 242 70968	VSX0086

VARIABLE RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
VR1002	VAR. RES. 10K	4822 101 10581	EVMLGGA00B14
VR1003	VAR. RES. 10K	4822 101 10581	EVML3GA00B14
VR2001	VAR. RES. 100K	4822 101 10582	EVMLGGA00B15
VR2002	VAR. RES. 100K	4822 101 10582	EVMLGGA00B15
VR6001	VAR. RES. 10K	4822 101 10581	EVMLGGA00B14
VR6002	VAR. RES. 2K	4822 101 10583	EVMLGGA00B23

PROTECTORS

POSNR	DESCRIPTION	ORDERING CODE	
PR1001	PROTECTOR VSF0014A10	4822 252 60102	VSF0014A10
PR1002	PROTECTOR VSF0014A08	4822 252 60102	VSF0014A08

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 1001	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 1002	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 1003	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 1004	TRANSISTOR 2SD1328	4822 130 42668	2SD1328
Q 1005	TRANSISTOR 2SD1328	4822 130 42668	2SD1328
Q 1006	TRANSISTOR 2SD1030	4822 130 42666	2SD1030
Q 2001	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2002	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 2003	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2004	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 2005	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 2006	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2007	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 2008	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2009	TRANSISTOR 2SB819	4822 130 42339	2SB819
Q 2010	TRANSISTOR 2SB819	4822 130 42339	2SB819
Q 2011	TRANSISTOR 2SB819	4822 130 42339	2SB819
Q 2012	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2013	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2014	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2015	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 2016	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2017	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 2018	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 6001	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 6002	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 6003	TRANSISTOR 2SB710	4822 130 42662	2SB710
Q 6004	TRANSISTOR 2SB710	4822 130 42662	2SB710
Q 6005	TRANSISTOR 2SB710	4822 130 42662	2SB710
Q 6006	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 6007	TRANSISTOR 2SD602	4822 130 42672	2SD602
Q 6008	TRANSISTOR 2SB779	4822 130 43522	2SB779
Q 6009	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 6010	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 6011	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 6012	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 6013	TRANSISTOR 2SD601	4822 130 42669	2SD601

COMBINATION PARTS

POSNR	DESCRIPTION	ORDERING CODE	
QR6001	COM. PARTS UN2112	4822 111 90812	UN2112
QR6002	COM. PARTS UN2212	4822 111 90814	UN2212
QR6004	COM. PARTS UN2212	4822 111 90814	UN2212
QR6007	COM. PARTS UN2212	4822 111 90814	UN2212
QR6009	COM. PARTS UN2112	4822 111 90812	UN2112
QR6010	COM. PARTS UN2212	4822 111 90814	UN2212
QR6011	COM. PARTS UN2212	4822 111 90814	UN2212
QR6012	COM. PARTS UN2212	4822 111 90814	UN2212
QR6013	COM. PARTS UN2112	4822 111 90812	UN2112
QR6014	COM. PARTS UN2112	4822 111 90812	UN2112
QR6015	COM. PARTS UN2112	4822 111 90812	UN2112
QR6016	COM. PARTS UN2112	4822 111 90812	UN2112
QR6018	COM. PARTS UN2113	4822 111 90813	UN2113
QR6020	COM. PARTS UN2113	4822 111 90813	UN2113
QR6021	COM. PARTS UN2212	4822 111 90814	UN2212
QR6022	COM. PARTS UN2212	4822 111 90814	UN2212
QR6023	COM. PARTS UN2212	4822 111 90814	UN2212
QR6024	COM. PARTS UN2212	4822 111 90814	UN2212
QR6025	COM. PARTS UN2212	4822 111 90814	UN2212
QR6026	COM. PARTS UN2212	4822 111 90814	UN2212
QR6027	COM. PARTS UN2212	4822 111 90814	UN2212
QR6028	COM. PARTS UN2212	4822 111 90814	UN2212
QR6029	COM. PARTS UN2212	4822 111 90814	UN2212
QR6030	COM. PARTS UN2212	4822 111 90814	UN2212
QR6031	COM. PARTS UN2212	4822 111 90814	UN2212

FILTERS

POSNR	DESCRIPTION	ORDERING CODE	
FJ6001	RT TERMINAL	4822 218 20557	VJR0174
FJ6002	RT TERMINAL	4822 218 20557	VJR0174

MISCELLANEOUS

POSNR	DESCRIPTION	ORDERING CODE	
	CLAMPER	4822 404 60224	VJF0304
	FLEXIBLE CONNECTOR	4822 267 30718	VWJ0219

REMOTE CONTROL JACK C.B.

JACK

POSNR	DESCRIPTION	ORDERING CODE	
J 1501	JACK VJJ0125	4822 267 30665	VJJ0125
D 1501	DIODE MA4100	4822 130 33039	MA4100
L 1501	COIL 220UH	4822 157 52163	VLQEL05F221K

LUMINANCE /CHROMINANCE C.B.A.

P.C.B. ASS'Y

POSNR	DESCRIPTION	ORDERING CODE	
IC3001	P.C.B. ASS'Y VEFY007	4822 214 31074	VEFY007
IC8001	P.C.B.ASS'Y VEFC009	4822 214 31073	VEFC009

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 3001	TRANSISTOR 2SC1621	4822 130 42665	2SC1621
Q 3002	TRANSISTOR 2SD602	4822 130 42672	2SD602
Q 3003	TRANSISTOR 2SB710	4822 130 42662	2SB710
Q 3004	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 3005	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 3006	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 3007	TRANSISTOR 2SC1621	4822 130 42665	2SC1621
Q 3008	TRANSISTOR 2SD602	4822 130 42672	2SD602
Q 3009	TRANSISTOR 2SB710	4822 130 42662	2SB710
Q 3010	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 3011	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 3012	TRANSISTOR 2SC1621	4822 130 42665	2SC1621
Q 3013	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 3014	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 3015	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 8001	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 8004	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 8006	TRANSISTOR 2SC1621	4822 130 42665	2SC1621

COMBINATION PARTS

POSNR	DESCRIPTION	ORDERING CODE	
QR3001	COM. PART UN2212	4822 111 90814	UN2212
QR8001	COM. PARTS UN2213	4822 111 90815	UN2213
QR8002	COM. PARTS UN2217	4822 111 90816	UN2217
QR8003	COM. PARTS UN2217	4822 111 90816	UN2217

DIODE

POSNR	DESCRIPTION	ORDERING CODE	
D 3001	DIODE MA151K	4822 130 32635	MA151K

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 3001	COIL 100UH	4822 157 51975	VLQEL05F101K
L 3002	COIL 15UH	4822 157 10212	VLQ0163K150
L 3003	COIL 15UH	4822 157 10212	VLQ0163K150
L 3004	COIL 100UH	4822 157 51975	VLQEL05F101K
L 3007	COIL 56UH	4822 157 51986	VLQEL05F560K
L 3008	COIL 100UH	4822 157 51975	VLQEL05F101K
L 3009	COIL 100UH	4822 157 51975	VLQEL05F101K
L 3010	COIL 12UH	4822 157 10211	VLQ0163K120
L 3011	COIL 100UH	4822 157 51975	VLQEL05F101K
L 3012	COIL 56UH	4822 157 10208	VLQ0163J560
L 3013	COIL 68UH	4822 157 10209	VLQ0163J680
L 8001	COIL 15UH	4822 157 10212	VLQ0163K150
L 8002	COIL 100UH	4822 157 51975	VLQEL05F101K
L 8003	COIL 100UH	4822 157 51975	VLQEL05F101K
L 8004	COIL 47UH	4822 157 51995	VLQEL05F470K

DELAY LINE

POSNR	DESCRIPTION	ORDERING CODE	
DL3001	DELAY LINE EFDVN645A	4822 320 40111	EFDVN645A43D
DL8001	DELAY LINE VLD0074	4822 320 40125	VLD0074

FILTERS

POSNR	DESCRIPTION	ORDERING CODE	
FL3001	FILTER ELB4S002	4822 154 70034	ELB4S002
FL3002	FILTER ELB4P003	4822 154 70026	ELB4P003
FL3003	FILTER ELB4P003	4822 154 70026	ELB4P003
FL8001	FILTER ELB4Q013	4822 154 70032	ELB4Q013
FL8002	FILTER ELB4Q004	4822 154 70027	ELB4Q004
FL8003	FILTER ELB4Q005	4822 154 70028	ELB4Q005

VARIABLE RESISTOR

POSNR	DESCRIPTION	ORDERING CODE	
VR3001	VAR. RES. 2K	4822 101 10583	EVMLGGA00B23

CRYSTAL OSCILLATOR

POSNR	DESCRIPTION	ORDERING CODE	
X 8001	CRY. OSC. VSX0132	4822 242 70971	VSX0132

HEAD AMP C.B.A.

INTEGRATED CIRCUIT

POSNR	DESCRIPTION	ORDERING CODE	
IC5001	INT. CIR. AN3311K	4822 209 83179	AN3311K

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 5001	TRANSISTOR 2SC2404	4822 130 42468	2SC2404
Q 5002	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 5003	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 5004	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 5005	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 5006	TRANSISTOR 2SD1328	4822 130 42668	2SD1328
Q 5007	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 5010	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 5011	TRANSISTOR 2SD1328	4822 130 42668	2SD1328
Q 5012	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 5015	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 5016	TRANSISTOR 2SD1328	4822 130 42668	2SD1328
Q 5017	TRANSISTOR 2SB709	4822 130 42661	2SB709
Q 5020	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 5021	TRANSISTOR 2SD1328	4822 130 42668	2SD1328
Q 5022	TRANSISTOR 2SB709	4822 130 42661	2SB709

COMBINATION PARTS

POSNR	DESCRIPTION	ORDERING CODE	
QR5001	COM. PARTS UN2111	4822 111 90811	UN2111
QR5002	COM. PARTS UN2213	4822 111 90815	UN2213
QR5003	COM. PARTS UN2111	4822 111 90811	UN2111
QR5004	COM. PARTS UN2213	4822 111 90815	UN2213
QR5005	COM. PARTS UN2111	4822 111 90811	UN2111
QR5006	COM. PARTS UN2213	4822 111 90815	UN2213
QR5007	COM. PARTS UN2111	4822 111 90811	UN2111
QR5008	COM. PARTS UN2213	4822 111 90815	UN2213

VARIABLE RESISTOR

POSNR	DESCRIPTION	ORDERING CODE	
VR5001	VAR. RES. 1K	4822 100 10844	EVMLGGA00B13

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 5001	COIL VLF0365	4822 157 52306	VLF0365
L 5002	COIL VLF0365	4822 157 52306	VLF0365
L 5003	COIL VLF0365	4822 157 52306	VLF0365
L 5004	COIL VLF0365	4822 157 52306	VLF0365
L 5005	COIL 33UH	4822 157 10207	VLQ0163J330
L 5006	COIL 18UH	4822 157 10213	VLQ0163K180
L 5007	COIL 150UH	4822 157 51981	VLQEL05F151K
L 5008	COIL 15UH	4822 157 10206	VLQ0163J150
L 5009	COIL 100UH	4822 157 51975	VLQEL05F101K
L 5010	COIL 100UH	4822 157 51975	VLQEL05F101K
L 5011	COIL 22UH	4822 157 10214	VLQ0163K220
L 5012	COIL 680UH	4822 157 51996	VLQEL05F681K

FILTERS

POSNR	DESCRIPTION	ORDERING CODE	
FL5001	FILTER ELB4P001	4822 154 70025	ELB4P001

AUDIO C.B.A.

INTEGRATED CIRCUITS

POSNR	DESCRIPTION	ORDERING CODE	
IC4001	I.C. UPC1513G	4822 209 83189	UPC1513G
IC4002	I.C. UPC1514G	4822 209 83922	UPC1514G
IC4003	I.C. M5201L	4822 209 83934	M5201L

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 4001	TRANSISTOR 2SD602	4822 130 42672	2SD602
Q 4002	TRANSISTOR 2SD601	4822 130 42669	2SD601
Q 4003	TRANSISTOR 2SD1030	4822 130 42666	2SD1030

DIODE

POSNR	DESCRIPTION	ORDERING CODE	
D 4001	DIODE MA151A	4822 130 32865	MA151A

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 4001	COIL 100UH	4822 157 51975	VLQEL05F101K
L 4002	COIL 100UH	4822 157 51975	VLQEL05F101K
L 4003	COIL 8.2MH	4822 157 52307	ELTMR822JB
L 4004	COIL 15UH	4822 157 52304	ELTMR153KB

TRANSFORMERS

POSNR	DESCRIPTION	ORDERING CODE	
T 4001	TRANSFORMER EIQ7QE00	4822 157 52487	EIQ7QE002B

VARIABLE RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
VR4001	VAR. RES. 2K	4822 101 10583	EVMLGGA00B23

OPERATION (I) C.B.A.

DIODES

POSNR	DESCRIPTION	ORDERING CODE	
D 6101	DIODE MA165	4822 130 32362	MA165
D 6102	DIODE MA165	4822 130 32362	MA165
D 6103	DIODE MA165	4822 130 32362	MA165
D 6104	DIODE MA165	4822 130 32362	MA165
D 6105	DIODE MA165	4822 130 32362	MA165
D 6106	DIODE MA165	4822 130 32362	MA165

SWITCHES

POSNR	DESCRIPTION	ORDERING CODE	
SW6101	SWITCH EVQQL407K	4822 277 21055	EVQQL407K
SW6102	SWITCH EVQQL407K	4822 277 21055	EVQQL407K
SW6103	SWITCH EVQQL407K	4822 277 21055	EVQQL407K
SW6104	SWITCH EVQQL407K	4822 277 21055	EVQQL407K
SW6105	SWITCH EVQQL407K	4822 277 21055	EVQQL407K
SW6106	SWITCH EVQQL407K	4822 277 21055	EVQQL407K

OPERATION (II) C.B.A.

DIODES

POSNR	DESCRIPTION	ORDERING CODE	
D 6201	DIODE MA165	4822 130 32362	MA165
D 6202	LED	4822 130 32863	EBR3902S
D 6203	LED	4822 130 32863	EBR3902S

SWITCHES

POSNR	DESCRIPTION	ORDERING CODE	
SW6201	SWITCH WVQQSB04B	4822 276 11472	EVQQSB04B
SW6202	SWITCH WVQQSB04B	4822 276 11472	EVQQSB04B

OPERATION (III) C.B.A.

DIODES

POSNR	DESCRIPTION	ORDERING CODE	
D 6501	DIODE MA165	4822 130 32362	MA165
D 6502	DIODE MA165	4822 130 32362	MA165
D 6503	DIODE MA165	4822 130 32362	MA165
D 6504	DIODE MA165	4822 130 32362	MA165
D 6505	DIODE MA165	4822 130 32362	MA165

VARIABLE RESISTOR

POSNR	DESCRIPTION	ORDERING CODE	
VR6501	TRACKING VR 100K	4822 100 10878	EVLBYAA00B15

SWITCHES

POSNR	DESCRIPTION	ORDERING CODE	
SW6501	SWITCH EVQQSB04B	4822 276 11472	EVQQSB04B
SW6502	SWITCH EVQQSB04B	4822 276 11472	EVQQSB04B
SW6503	SWITCH EVQQSB04B	4822 276 11472	EVQQSB04B
SW6504	SWITCH EVQQSB04B	4822 276 11472	EVQQSB04B
SW6505	SWITCH EVQQSB04B	4822 276 11472	EVQQSB04B

EJECT C.B.

DIODES

POSNR	DESCRIPTION	ORDERING CODE	
D 6401	DIODE MA165	4822 130 32362	MA165

SWITCHES

POSNR	DESCRIPTION	ORDERING CODE	
SW6401	SWITCH EVQQSB04B	4822 276 11472	EVQQSB04B

FUSE CONNECTION C.B.

MISCELLANEOUS

POSNR	DESCRIPTION	ORDERING CODE	
	FUSE HOLDER	4822 256 30252	TJC6320

START/STOP C.B.

SWITCH

POSNR	DESCRIPTION	ORDERING CODE	
	SWITCH VSP0148	4822 277 21054	VSP0148

MECHANISM CONNECTION C.B.

PHOTO INTERRUPTER

POSNR	DESCRIPTION	ORDERING CODE	
Q 1501	PHOTO IN. ON2160	4822 209 82361	ON2160

FE HEAD C.B.

TRANSISTOR

POSNR	DESCRIPTION	ORDERING CODE	
Q 1504	TRANSISTOR 2SC2603	4822 130 42545	2SC2603

COIL

POSNR	DESCRIPTION	ORDERING CODE	
L 1502	COIL 220UH	4822 157 52163	VLQEL05F221K

TRANSFORMER

POSNR	DESCRIPTION	ORDERING CODE	
T 1501	TRANSFORMER VTD0014B	4822 157 52488	VTD0014B

ADAPTOR 22AV5120

MECHANICAL PARTS

POSNR	DESCRIPTION	ORDERING CODE	
1	TOP CASE	4822 432 91856	VKM0610
2	BOTTOM CASE	4822 432 91855	VKM0597
3	SUPPORT ANGLE	4822 600 70249	VMA6773
4	FAN BAG KIT	4822 736 50961	VQF1633
5	PACKING CASE	4822 600 70254	VPG2464
7	14PIN MULTI CABLE	4822 321 21396	VEK2645
8	INPUT TERMINAL	4822 267 40635	VEJ0472

ELECTRICAL PARTS

PRINTED CIRCUIT BOARD ASSEMBLY

POSNR	DESCRIPTION	ORDERING CODE	
	MAIN C.B.A.	4822 218 20545	VEP23041B
	MICRO SW C.B.	4822 212 50256	VJB20197
	INPUT TERMINAL	4822 267 40635	VEJ0472

REGULATOR IC

POSNR	DESCRIPTION	ORDERING CODE	
RG 301	REG.IC AN78L08	4822 209 83556	AN78L08

TRANSISTORS

POSNR	DESCRIPTION	ORDERING CODE	
Q 301	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 302	TRANSISTOR 2SC2206	4822 130 42253	2SC2206
Q 303	TRANSISTOR 2SB641	4822 130 42251	2SB641
Q 304	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 305	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 801	TRANSISTOR 2SD636	4822 130 41605	2SD636
Q 802	TRANSISTOR 2SC2206	4822 130 42253	2SC2206
Q 803	TRANSISTOR 2SD636	4822 130 41605	2SD636

DIODE

POSNR	DESCRIPTION	ORDERING CODE	
D 301	DIODE MA165	4822 130 32362	MA165

RESISTORS

POSNR	DESCRIPTION	ORDERING CODE	
R 301	RESISTOR 68	4822 116 52199	ERDS2TJ680
R 302	RESISTOR 56K	4822 116 52291	ERDS2TJ563
R 303	RESISTOR 27K	4822 116 52264	ERDS2TJ273
R 304	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 305	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 306	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 307	RESISTOR 56K	4822 116 52291	ERDS2TJ563
R 308	RESISTOR 15K	4822 116 52244	ERDS2TJ153
R 309	RESISTOR 2.2K	4822 116 52256	ERDS2TJ222
R 310	RESISTOR 1.5K	4822 116 52243	ERDS2TJ152
R 311	RESISTOR 3.9K	4822 116 52276	ERDS2TJ392
R 312	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 313	RESISTOR 470	4822 116 52224	ERDS2TJ471
R 314	RESISTOR 1M	4822 116 52235	ERDS2TJ105
R 315	RESISTOR 68K	4822 116 52297	ERDS2TJ683
R 316	RESISTOR 27K	4822 116 52264	ERDS2TJ273
R 317	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 318	RESISTOR 68	4822 116 52199	ERDS2TJ680
R 801	RESISTOR 56K	4822 116 52291	ERDS2TJ563
R 802	RESISTOR 27K	4822 116 52264	ERDS2TJ273
R 803	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 804	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 805	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 806	RESISTOR 56K	4822 116 52291	ERDS2TJ563
R 807	RESISTOR 56K	4822 116 52291	ERDS2TJ563
R 808	RESISTOR 820	4822 116 52231	ERDS2TJ821
R 809	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 810	RESISTOR 270	4822 116 52217	ERDS2TJ271
R 811	RESISTOR 56K	4822 116 52291	ERDS2TJ563
R 812	RESISTOR 27K	4822 116 52264	ERDS2TJ273
R 813	RESISTOR 1K	4822 116 52204	ERDS2TJ102
R 814	RESISTOR 68	4822 116 52199	ERDS2TJ680

CAPACITORS

POSNR	DESCRIPTION	ORDERING CODE	
C 301	ELECTROLYTE 6,3V 47U	4822 124 41128	ECEA0JK220
C 302	CERAMIC 50V 0.01	4822 122 32247	ECKF1H103ZF
C 303	ELECTROLYTIC 16V 47	4822 124 21517	ECEA1CK470
C 304	ELECTROLYTIC 6.3V 47	4822 124 21513	ECEA0JK470
C 305	ELECTROLYTIC 16V 10	4822 124 21533	ECEA1CK100
C 306	MYLAR 50V 0.33	4822 121 42269	ECQV1H334JZ
C 307	MYLAR 50V 0.1	4822 121 42179	ECQV1H104JZ
C 801	CERAMIC 50V 0.01	4822 122 32247	ECKF1H103ZF
C 802	CERAMIC 50V 0.01	4822 122 32247	ECKF1H103ZF
C 803	CERAMIC 50V 0.01	4822 122 32247	ECKF1H103ZF
C 804	CERAMIC 50V 0.01	4822 122 32247	ECKF1H103ZF
C 805	CERAMIC 50V 0.01	4822 122 32247	ECKF1H103ZF
C 806	ELECTROLYTIC 16V 47	4822 124 21517	ECEA1CK470

COILS

POSNR	DESCRIPTION	ORDERING CODE	
L 301	COIL 100UH	4822 157 51975	VLQEL05F101K
L 801	COIL 100UH	4822 157 51975	VLQEL05F101K

FILTERS

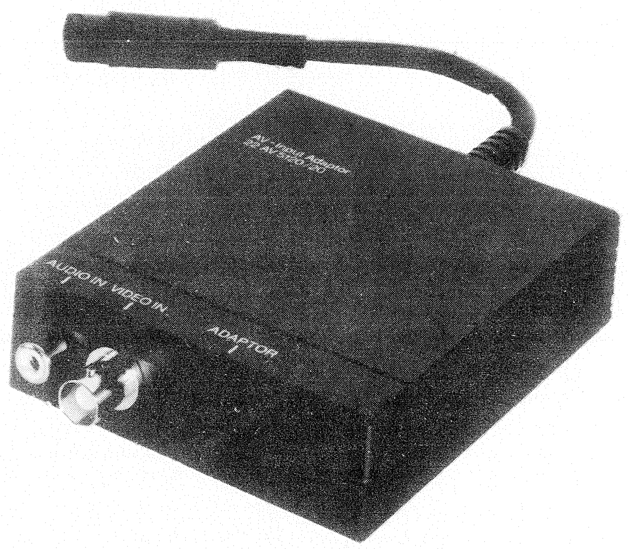
POSNR	DESCRIPTION	ORDERING CODE	
FL 301	FILTER (Y.L.P.F.)	4822 242 71392	ELB4R009
FL 801	FILTER (C.B.P.F.)	4822 242 71379	ELB4Q018

CONNECTORS

POSNR	DESCRIPTION	ORDERING CODE	
P 301	CONNECTOR 2P	4822 265 30428	VJP1229T
P 302	CONNECTOR 4P	4822 265 30387	VJP1231T
P 303	CONNECTOR 3P	4822 265 30429	VJP1230T
P 304	CONNECTOR 4P	4822 265 30387	VJP1231T
P 305	CONNECTOR 3P	4822 265 30429	VJP1230T
P 306	CONNECTOR 3P	4822 265 30429	VJP1230T

Line Adaptor

Video Input



38 993 A12

SPECIFICATIONS

Power Source: DC 12 V
Power Consumption: Approx. 0.4 watts
Television System: CCIR: 625 lines, 50 fields
PAL colour signal
Input Level: Video: VIDEO IN connector (BNC)
1.0 Vp-p, 75Ω terminated
Audio: AUDIO IN connector (Phono jack)
more than −10 dB, 47 kΩ
Weight: 120 g
Dimensions: 100(W) × 85(H) × 27(D) mm

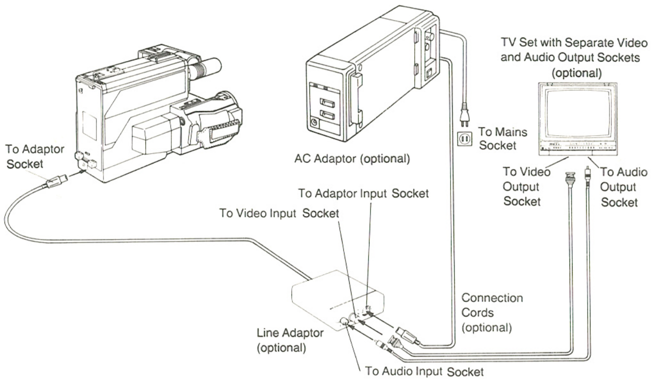
Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

CONTENTS

1. CONTROLS AND COMPONENTS 1
2. CIRCUIT BOARD 1
3. SCHEMATIC DIAGRAM 1
4. EXPLODED VIEW 2

1. CONTROL AND COMPONENTS

Recording of TV Programs

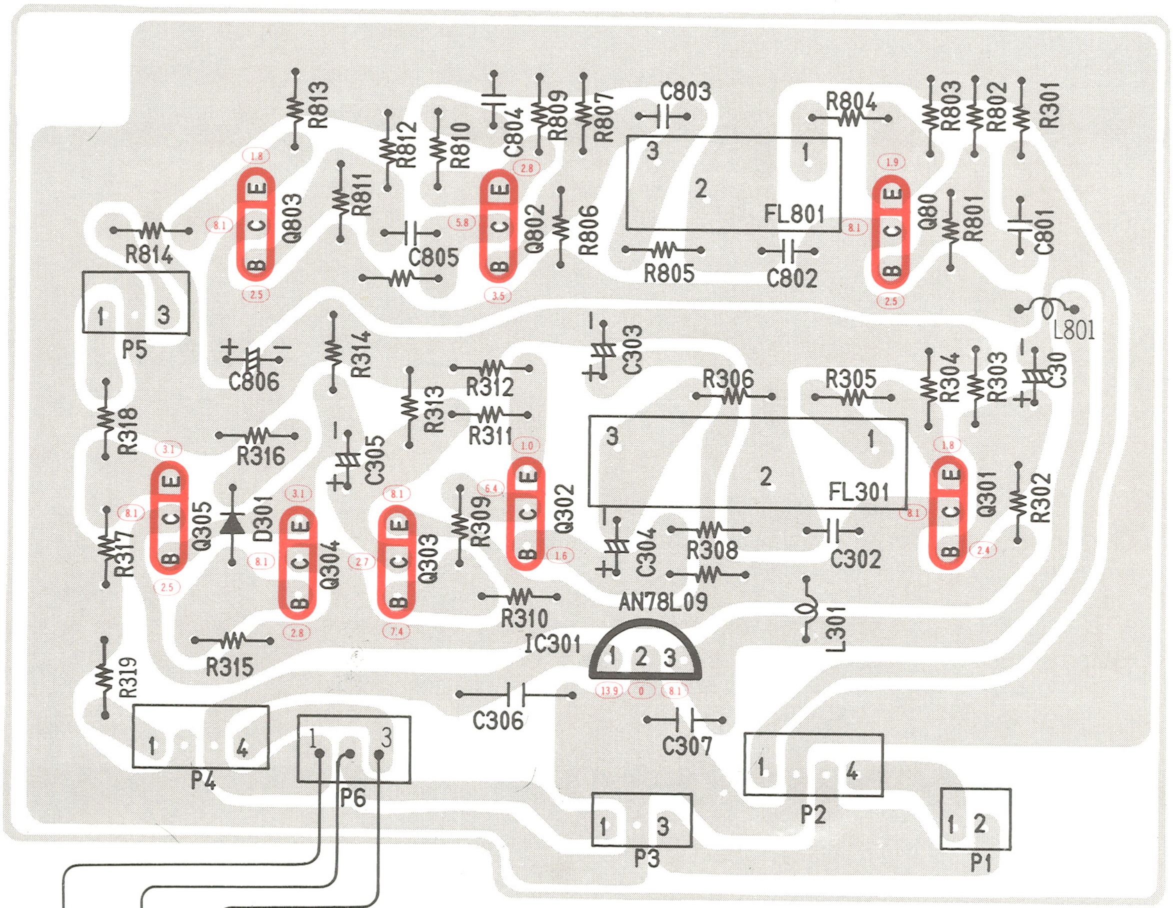

To Adaptor Socket
AC Adaptor (optional)
To Mains Socket
TV Set with Separate Video and Audio Output Sockets (optional)
To Adaptor Input Socket
To Video Input Socket
To Video Output Socket
To Audio Output Socket
Connection Cords (optional)
Line Adaptor (optional)
To Audio Input Socket

By connecting a TV set equipped with separate video and audio output jacks via the Line Adaptor (VW-KM3 optional) to the VHS Movie ,you can simultaneously record a program that is being received on the TV set.

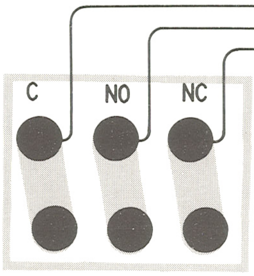
Recording of another source instead of TV set as shown in above picture, if another source is connected, via Line Adaptor to NV-M3, recording of another source is possible.

Note:
When the Line Adaptor is being used, it is not possible to record sound via an external microphone.

2. CIRCUIT BOARD

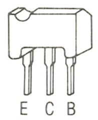

R813
R812
R810
C804
R809
R807
C803
R804
R803
R802
R301
R811
Q803
R814
C805
Q802
R806
FL801
R805
C802
Q801
R801
C801
P5
L801
C806
R314
R312
C303
R306
R305
R304
R303
C30
R313
R318
R316
R311
C305
FL301
Q305
D301
Q304
Q303
R309
Q302
Q301
R302
R317
C304
R308
C302
R310
AN78L09
IC301
L301
R315
R319
C306
C307
P4
P6
P2
P3
P1
B C E

LINE ADAPTOR CIRCUIT BOARD (VEP23041B)



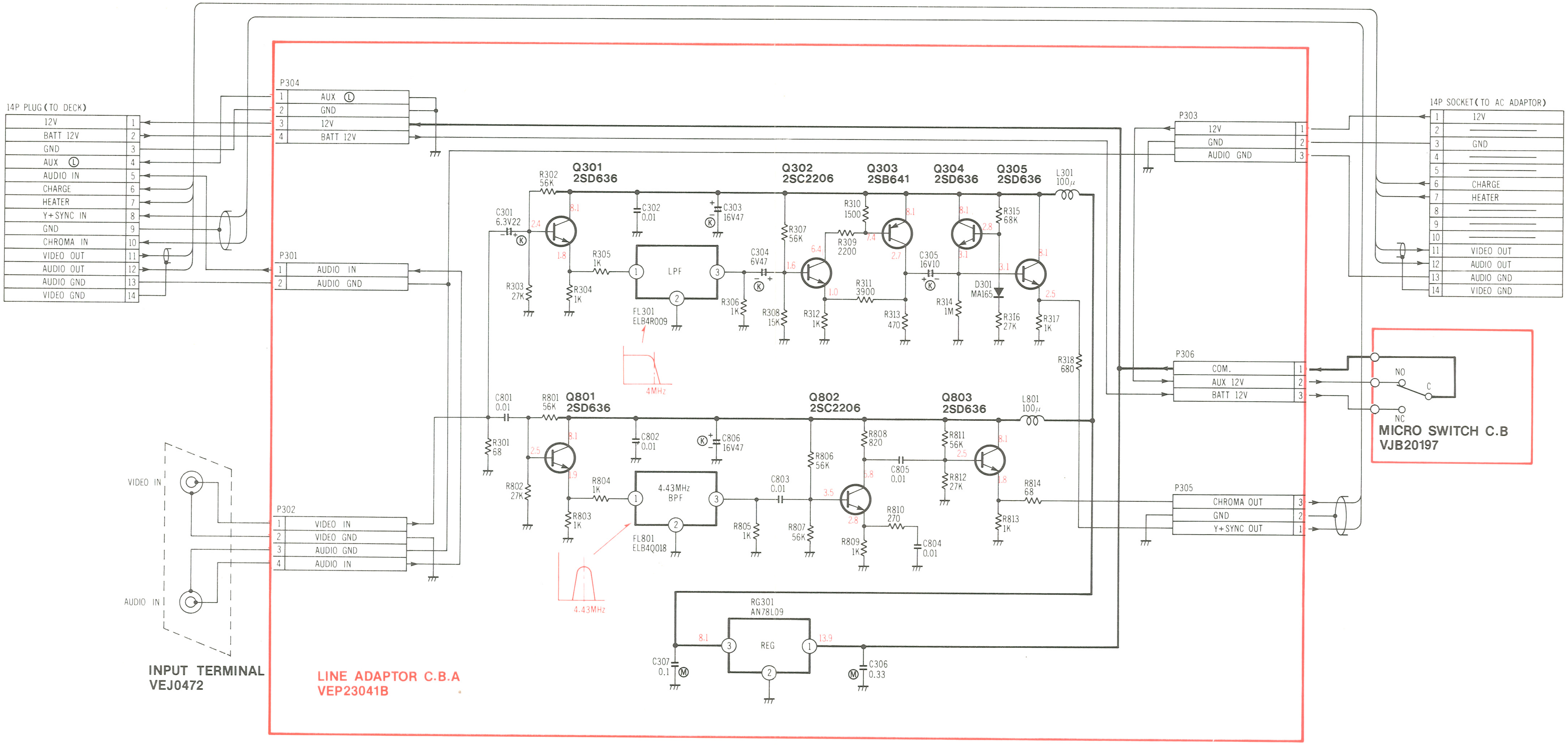
MICRO SW CIRCUIT BOARD (VJB20197)

ICs & TRANSISTORs INFORMATION



2SD636
2SC2206
2SB641

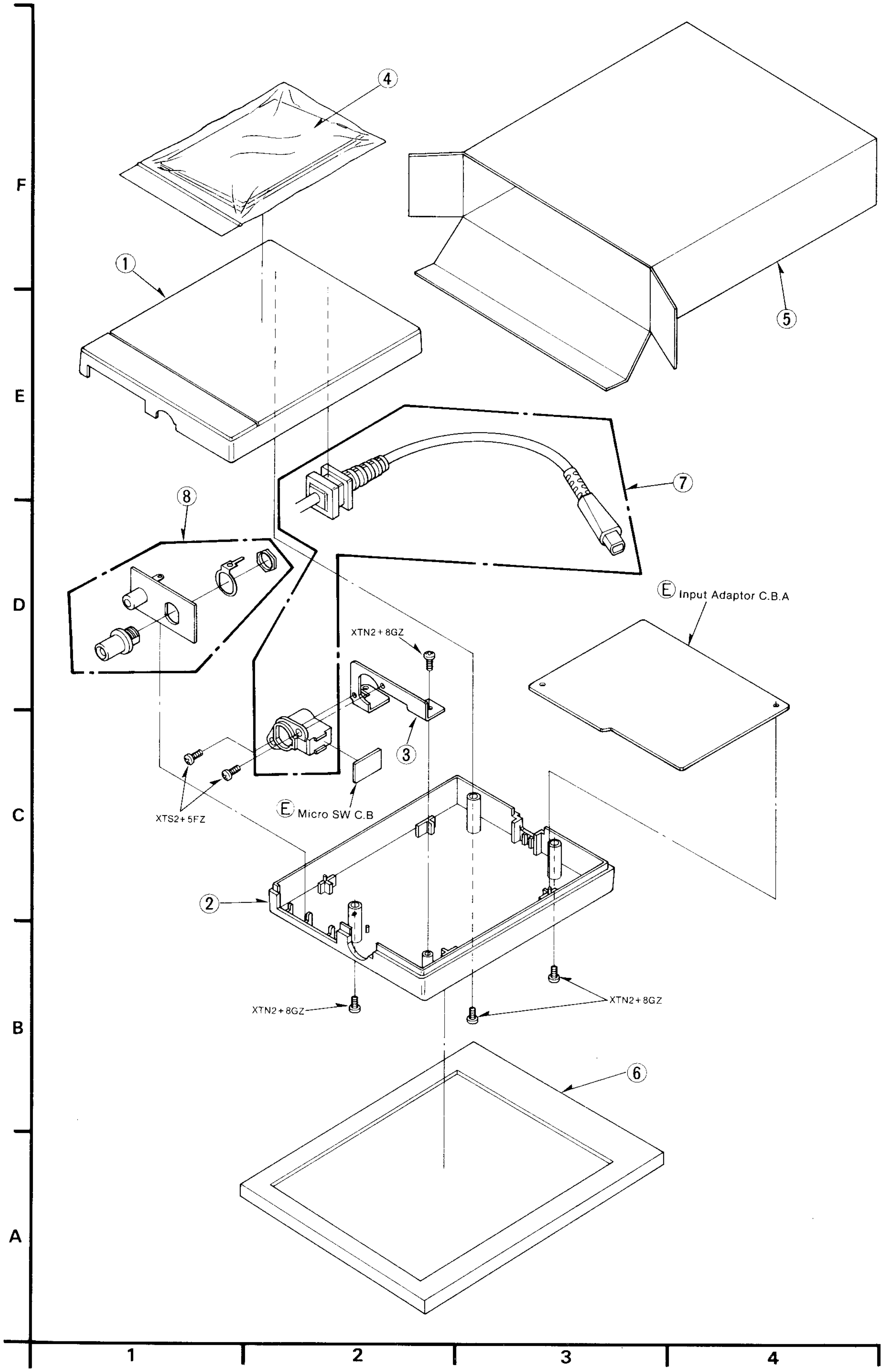
3. SCHEMATIC DIAGRAM


14P PLUG (TO DECK)
12V
BATT 12V
GND
AUX Ⓛ
AUDIO IN
CHARGE
HEATER
Y+SYNC IN
GND
CHROMA IN
VIDEO OUT
AUDIO OUT
AUDIO GND
VIDEO GND
P304
AUX Ⓛ
GND
12V
BATT 12V
P301
AUDIO IN
AUDIO GND
P302
VIDEO IN
VIDEO GND
AUDIO GND
AUDIO IN
VIDEO IN
AUDIO IN
INPUT TERMINAL
VEJ0472
Q301 2SD636
Q302 2SC2206
Q303 2SB641
Q304 2SD636
Q305 2SD636
R302 56K
C301 6.3V22
R303 27K
R304 1K
R305 1K
C302 0.01
C303 16V47
LPF
FL301 ELB4R009
4MHz
C304 6V47
R306 1K
R307 56K
R308 15K
R309 2200
R310 1500
R311 3900
R312 1K
R313 470
C305 16V10
R314 1M
D301 MA165
R315 68K
R316 27K
R317 1K
R318 680
L301 100μ
Q801 2SD636
Q802 2SC2206
Q803 2SD636
C801 0.01
R801 56K
R301 68
R802 27K
R803 1K
R804 1K
C802 0.01
C806 16V47
4.43MHz BPF
FL801 ELB4Q018
4.43MHz
C803 0.01
R805 1K
R806 56K
R807 56K
R808 820
R809 1K
R810 270
C804 0.01
C805 0.01
R811 56K
R812 27K
R813 1K
R814 68
L801 100μ
RG301 AN78L09
REG
C307 0.1
C306 0.33
LINE ADAPTOR C.B.A
VEP23041B
P303
12V
GND
AUDIO GND
P306
COM.
AUX 12V
BATT 12V
P305
CHROMA OUT
GND
Y+SYNC OUT
14P SOCKET (TO AC ADAPTOR)
12V
GND
CHARGE
HEATER
VIDEO OUT
AUDIO OUT
AUDIO GND
VIDEO GND
NO
C
NC
MICRO SWITCH C.B
VJB20197

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.

4. EXPLODED VIEW


④
⑤
F
①
E
⑦
⑧
Ⓔ Input Adaptor C.B.A
D
XTN2+8GZ
③
XTS2+5FZ
Ⓔ Micro SW C.B
C
②
XTN2+8GZ
XTN2+8GZ
B
⑥
A
1
2
3
4

VHS Movie

VKR6810

VHSmovie
Auto Focus Video Camera Recorder
PHILIPS
VHS

38 994 A12

SPECIFICATIONS

Power Source:	DC 12 V
Power Consumption:	Recording mode: 12 V—9.5 W (Battery Operation) Stand-by mode: 12 V—1.0 W (Battery Operation)
Pick-up System:	Single tube frequency separation system
Pick-up Tube:	One high-band (3.9 MHz) 1/2″ integral stripe filter NEWVICON tube
Illumination Standard:	1,400 lux
Required Minimum Illumination:	10 lux at F1.4
Microphone:	Unidirectional Electric Condencer Microphone
Lens:	Built-in 6 : 1 Power Zoom Lens with MACRO Function, Auto/Manual Iris, Auto Focus System F1.4 (9～54 mm) Lens Front Diameter 49 mm
Viewfinder:	1/2″ B/W Electric Viewfinder with graphic display
White Balance:	Full Auto/Auto White Balance
Camera Mounting:	One 1/4″-20 threaded hole standard camera tripod
Video Recording System:	4 rotary heads, helical scanning system
Tape Speed:	23.39 mm/s
Tape Format:	Tape width 12.7 mm high density tape
Record/Playback Time:	240 min. with NV-E240
FF/REW Time:	Approx. 12.0 min. with NV-E180
VIDEO	
Television System:	CCIR: 625 lines, 50 fields PAL colour signal
Modulation System:	Luminance: FM azimuth recording Colour signal: Converted subcarrier phase shift recording
Output Level:	ADAPTOR (Multi): 1.0 Vp-p, 75 Ω unbalanced
AUDIO	
Input Level:	MIC IN (M3): −70 dB, 4700 Ω unbalanced
Output Level:	ADAPTOR (Multi): −8 dB 600 Ω unbalanced
Audio Track:	1 track
Video Horizontal Resolution:	more than 250 lines
Signal-to-Noise Ratio:	Video: more than 43 dB Audio: more than 43 dB
Audio Frequency Response:	80 Hz—8 kHz
Operating Room Temperature:	0°C—40°C
Operating Humidity:	10%—80%
Weight:	Approx. 2.8 kg (without Battery Pack)
Dimensions:	155(W)×192(H)×324(D) mm (with Viewfinder turned down) (without carrying handle)
Standard Accessories:	1 pc. Carrying Handle 1 pc. Earphone 1 pc. AV Converter connector
Optional Accessories:	Video cassette tape: E240 Approx. 344 m, 240 min. E180 Approx. 258 m, 180 min. E120 Approx. 174 m, 120 min. E60 Approx. 88 m, 60 min. 1 pc. Battery Pack, 22AV5119 1 pc. AC Adaptor, 22AV5111 1 pc. Pause Remote Controller, 22AV5114 Car Battery Cord, 22AV5113 System Carrying Case, 22AV5117 Audio/Video input Adaptor, 22AV5120

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

CONTENTS

SECTION 1
GENERAL DESCRIPTION

1. HOW TO USE VHS MOVIE 1-1
   1-1. FEATURES 1-1
   1-2. CONTROL AND COMPONENTS 1-1
   1-3. VHS MOVIE SYSTEM (OPTIONAL) 1-3
   1-4. CONNECTIONS 1-3
      1-4-1. CONNECTIONS TO A TV 1-3
   1-5. EVF (ELECTRONIC VIEW FINDER) INDICATION 1-4
   1-6. CAMERA RECORDING 1-5
   1-7. CAMERA PLAYING BACK 1-7
   1-8. CAMERA SHOOTING 1-10
      1-8-1. SHOOTING PROCEDURES 1-10
      1-8-2. AUTO FOCUS FUNCTION 1-11
      1-8-3. FOCUSING IN THE MANUAL MODE ADJUSTING FOCUS RING 1-12
      1-8-4. IRIS CLOSE/OPEN ADJUSTMENT 1-13
      1-8-5. MACRO CLOSE-UP 1-13
2. WHAT ARE THE DIFFERENCES? 1-15
   2-1. GENERAL 1-15
   2-2. SYSTEM CONTROL CIRCUIT 1-15
      2-2-1. DEW DETECTION SYSTEM 1-15
      2-2-2. CAMERA/AF ON/OFF CONTROL 1-15
      2-2-3. BACK-UP CIRCUIT 1-16
      2-2-4. CAMERA/LINE INPUT SWITCHING CIRCUIT 1-16
   2-3. SERVO CIRCUIT 1-16
      2-3-1. CYLINDER SERVO 1-16
      2-3-2. CAPSTAN SERVO 1-18
   2-4. VIDEO CIRCUIT 1-19
   2-5. CAMERA CIRCUIT 1-19
      2-5-1. AUTOMATIC WHITE TRACKING (AWT) 1-19
      2-5-2. AUTO FOCUS CIRCUIT 1-20
3. ABBREVIATIONS OF TERMS 1-23

SECTION 2
ADJUSTMENT PROCEDURES

2-1. DISASSEMBLY METHOD 2-1
   2-1-1. DISASSEMBLY FLOWCHART 2-1
   2-1-2. DISASSEMBLY METHOD 2-1
2-2. REPLACEMENT 2-6
   2-2-1. REPLACEMENT OF PICK-UP TUBE 2-6
   2-2-2. REPLACEMENT OF LENS UNIT 2-7
   2-2-3. REPLACEMENT OF DD CYLINDER UNIT 2-9
   2-2-4. REPLACEMENT OF UPPER CYLINDER UNIT 2-9
   2-2-5. REPLACEMENT OF CAPSTAN STATOR UNIT 2-10
   2-2-6. REPLACEMENT OF TENSION BAND 2-11
2-3. MECHANICAL ADJUSTMENT PROCEDURES 2-11
   2-3-1. PROCEDURE FOR CLEANING OF UPPER CYLINDER UNIT 2-11
   2-3-2. CONFIRMATION OF BRAKE TORQUE 2-11
   2-3-3. TENSION POST POSITION ADJUSTMENT 2-12
   2-3-4. BACK TENSION ADJUSTMENT 2-12
      (1) SYMPLIFIES BACK TENSION ADJUSTMENT 2-12
      (2) COMPLETE BACK TENSION ADJUSTMENT 2-12
   2-3-5. REEL TABLES HEIGHT ADJUSTMENT 2-13
   2-3-6. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS 2-13
   2-3-7. TAPE INTERCHANGEABILITY ADJUSTMENT 2-14
      (1) CONFIRMATION/ADJUSTMENT OF ENVELOPE OUTPUT 2-14
      (2) CONFIRMATION OF A/C HEAD HEIGHT 2-15
      (3) CONFIRMATION OF TILT OF A/C HEAD 2-15
      (4) ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH 2-15
      (5) HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD 2-16
   2-3-8. ADJUSTMENT OF F.G. HEAD GAP 2-16
   2-3-9. ASSEMBLY ADJUSTMENT PROCEDURES OF MECHANISM 2-16
      (1) ASSEMBLY PROCEDURES OF LOADING RINGS AND LOADING GEARS 2-16
      (2) ASSEMBLY PROCEDURES OF TAKE-UP LOADING GUIDE AND TAKE-UP LOADING POSTS UNIT 2-17
      (3) ASSEMBLY PROCEDURES OF SUPPLY LOADING GUIDES AND SUPPLY LOADING POSTS UNIT 2-17
      (4) ASSEMBLY PROCEDURES OF MAIN ROD 2-17
      (5) ASSEMBLY PROCEDURES OF CAM GEAR AND SECTOR GEAR 2-17
      (6) ASSEMBLY PROCEDURES OF MODE SELECT SWITCH 2-18
   SERVICING FIXTURES & TOOLS 2-19
2-4. ELECTRIC ADJUSTMENT PROCEDURES 2-20
   2-4-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION 2-20
      TEST EQUIPMENT AND TOOL 2-20
      PREPARATIONS 2-20
      HOW TO READ THE ADJUSTMENT PROCEDURES 2-21
      CAMERA ADJUSTMENT PROCEDURES 2-22
      1. 8.6V ADJUSTMENT 2-22
      2. 4.43MHz ADJUSTMENT 2-22
      3. HIGH VOLTAGE ADJUSTMENT 2-22
      4. TARGET VOLTAGE ADJUSTMENT 2-23
      5. BIAS LIGHT ADJUSTMENT 2-23
      6. BEAM CURRENT ADJUSTMENT 2-23
      7. FOCUS ADJUSTMENT 2-24
      8. BACK FOCUS ADJUSTMENT 2-24
      9. ROTATION ADJUSTMENT 2-24
      10. BEAM ALIGNMENT ADJUSTMENT 2-25
      11. VERTICAL SIZE/CENTRING ADJUSTMENT 2-25
      12. HORIZONTAL LINEARITY/SIZE ADJUSTMENT 2-26
      13. HORIZONTAL CENTRING ADJUSTMENT 2-26

14. DARK SHADING ADJUSTMENT 2-26
15. PEDESTAL LEVEL ADJUSTMENT 2-27
16. ALC/AGC ADJUSTMENT 2-27
17. VERTICAL EDGE AND CCD DELAY BIAS ADJUSTMENT 2-28
18. YH GAIN ADJUSTMENT 2-28
19. R/B SEPARATION ADJUSTMENT 2-28
20. DYNAMIC FOCUS ADJUSTMENT 2-29
21. COLOUR SHADING ADJUSTMENT 2-29
22. R-Y,B-Y SIGNAL PEDESTAL PRESET ADJUSTMENT 2-30
23. R/B GAIN AND YL PEDESTAL ADJUSTMENT 2-31
24. R GAIN ADJUSTMENT 2-31
25. R/B GAMMA ADJUSTMENT 2-32
26. VERTICAL EDGE ADJUSTMENT 2-32
27. COLOUR PHASE AND GAIN ADJUSTMENT 2-32
28. HIGH INTENSITY SUPPRESS ADJUSTMENT 2-33
29. AWC OFF SET ADJUSTMENT 2-33
30. AWT SENSOR OUTPUT ADJUSTMENT 2-34
31. AWT SENSOR LOW ILLUMINATION CUT ADJUSTMENT 2-34
32. AWT WHITE BALANCE ADJUSTMENT 2-34
33. AWT WHITE TRACKING ADJUSTMENT 2-35

AUTO FOCUS SECTION 2-36
  AUTO FOCUS ADJUSTMENT PROCEDURES 2-36
    1. AF LED POSITION ADJUSTMENT 2-36
    2. AF LED CURRENT ADJUSTMENT 2-37
    3. OFF SET ADJUSTMENT 2-37
    4. ENCODER POSITION ADJUSTMENT 2-38
    5. AF RECEIVER (1) ADJUSTMENT 2-38
    6. AF RECEIVER (2) ADJUSTMENT 2-39
    7. D/A CONVERTER ADJUSTMENT 2-39
  EVF ADJUSTMENT PROCEDURES 2-40
  PREPARATION 2-40
    1. HORIZONTAL HOLD ADJUSTMENT 2-40
    2. PICTURE TILT ADJUSTMENT 2-40
    3. EVF V. SIZE AND H. SIZE ADJUSTMENT 2-40
    4. CONTRAST AND BRIGHTNESS ADJUSTMENT 2-40
    5. FOCUS ADJUSTMENT 2-40
  LOCATION OF TEST POINTS AND CONTROLS (CAMEARA SECTION) 2-41

2-4-2. ELECTRICAL ADJUSTMENT FOR VTR SECTION 2-42
  TEST EQUIPMENT AND TOOL 2-42
  PREPARATION 2-42
  HOW TO READ THE ADJUSTMENT PROCEDURES 2-42
    1. REG.+5V ADJUSTMENT 2-42
    2. REG.+9V ADJUSTMENT 2-42
    3. UNDER CUT ADJUSTMENT 2-42
    4. CHARACTER POSITION ADJUSTMENT 2-42
    5. PG SHIFTER ADJUSTMENT 2-42
    6. TRACKING FIX ADJUSTMENT 2-42
    7. LUMINANCE RECORDING CURRENT ADJUSTMENT 2-43
    8. AUDIO BIAS CURRENT ADJUSTMENT 2-43
    9. AUDIO PLAYBACK LEVEL ADJUSTMENT 2-43
  LOCATION OF TEST POINTS AND CONTROLS (VTR SECTION) 2-43

SECTION 3
BLOCK DIAGRAM & SCHEMATIC DIAGRAM

3-1. CAMERA PROCESS BLOCK DIAGRAM 3-1
3-2. CAMERA DEFLECTION BLOCK DIAGRAM 3-1
3-3. AUTO FOCUS BLOCK DIAGRAM 3-2
3-4. ELECTRONIC VIEW FINDER (E.V.F) BLOCK DIAGRAM 3-2
3-5. POWER SUPPLY BLOCK DIAGRAM 3-2
3-6. SYSTEM CONTROL BLOCK DIAGRAM 3-3
3-7. SERVO BLOCK DIAGRAM 3-4
3-8. LUMINANCE PROCESS BLOCK DIAGRAM 3-5
3-9. CHROMINANCE PROCESS BLOCK DIAGRAM 3-5
3-10. CAMERA SCHEMATIC DIAGRAM 3-6
3-11. CAMERA SENSOR SCHEMATIC DIAGRAM 3-8
3-12. CAMERA MAIN CIRCUIT BOARD 3-9
3-13. AUTO FOCUS SCHEMATIC DIAGRAM 3-10
3-14. AUTO FOCUS CIRCUIT BOARD 3-10
3-15. ELECTRONIC VIEW FINDER (E.V.F) SCHEMATIC DIAGRAM 3-11
3-16. ELECTRONIC VIEW FINDER (E.V.F) CIRCUIT BOARD 3-11
3-17. MAIN CIRCUIT BOARD-SYSTEM CONTROL 3-12
3-18. SYSTEM CONTROL SCHEMATIC DIAGRAM 3-15
3-19. SERVO SCHEMATIC DIAGRAM 3-16
3-20. SERVO in Main Circuit Board 3-16
3-21. POWER SUPPLY SCHEMATIC DIAGRAM 3-17
3-22. POWER SUPPLY in Main Circuit Board 3-17
3-23. LUMINANCE, CHROMINANCE & HEAD AMP CIRCUIT BOARD 3-18
3-24. LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM 3-19
3-25. AUDIO SCHEMATIC DIAGRAM 3-20
3-26. AUDIO CIRCUIT BOARD 3-20
3-27. CIRCUIT BOARD LAYOUT 3-20
3-28. INTERCONNECTION SCHEMATIC DIAGRAM 3-21

SECTION 4
EXPLODED VIEWS AND PARTS LIST

4-1. EXPLODED VIEW 4-1
  1. LENS SECTION 4-1
  2. ELECTRONIC VIEW FINDER (E.V.F) & MICROPHONE SECTION 4-2
  3. MECHANISM (1) SECTION 4-3
  4. MECHANISM (2) SECTION 4-4
  5. CHASSIS & FRAME SECTION 4-5
  6. PACKING PARTS SECTION 4-6
MECHANICAL REPLACEMENT PARTS LIST
ELECTRICAL REPLACEMENT PARTS LIST

SECTION 1
GENERAL DESCRIPTION

1. HOW TO USE VHS MOVIE

1-1. FEATURES

1. Auto Focus Function

An auto focus (AF) is based on triangulation method for measuring the distance between the object and camera by projecting an infrared beam and receiving it after being reflected by the object.
The Auto Focus mechanism will then automatically and instantly turn the Focus Ring on the lens for correct focus distance setting.

2. The VHS Movie Uses Standard VHS Video Cassettes

The VHS Movie uses the same video cassette tapes as any VHS-system video recorder, thus assuring complete compatibility and allowing up to 4 hours continuous recording on a single cassette (E240).

3. Playback of Tapes-indoors and Outdoors

The VHS Movie offers not only camera recording but a range of different playback functions as well: normal playback, CUE & REVIEW and Still. Playback is possible via the viewfinder, or a connected TV monitor or a TV set, when using with an AC Adaptor (optional).

4. VHS Movie Camera

The VHS Movie is a tremendously versatile video system for both camera recording and playback in a single unit.

5. Compact, Lightweight and Superportable

With only 2.8 kg (without battery pack) the VHS Movie is extremely lightweight and handy to use.

6. 3-Way Power Supply

The VHS Movie can be operated on three different power sources: rechargeable battery pack (supplied), AC adaptor (supplied) or car battery cord (optional).

7. Full Auto White Balance Adjustment Function

This function automatically adjusts the white balance according to the illumination of the scene that is being shot.

8. Operation Information Centre in the Electronic Viewfinder (EVF)

Easy-to-see indications in the viewfinder inform you of the camera operating conditions during shooting, so you don't have to remove the eye from the viewfinder. The indications include: Date, Memory, Tape Counter, Recording and various warnings.

9. Rec Review Function

After you finish shooting a scene and tape is stopped in the pause mode, press the Rec Review Button. The tape will automatically rewind for a few seconds, and the end of the recorded scene will then be played back to let you confirm that the recording conditions are satisfactory.

10. 6X Power Zoom Lens and Macro Feature

The power zoom lens allows smooth zoom-in and zoomout shots and quick adjustment of the picture angle to anywhere from wide to telephoto.

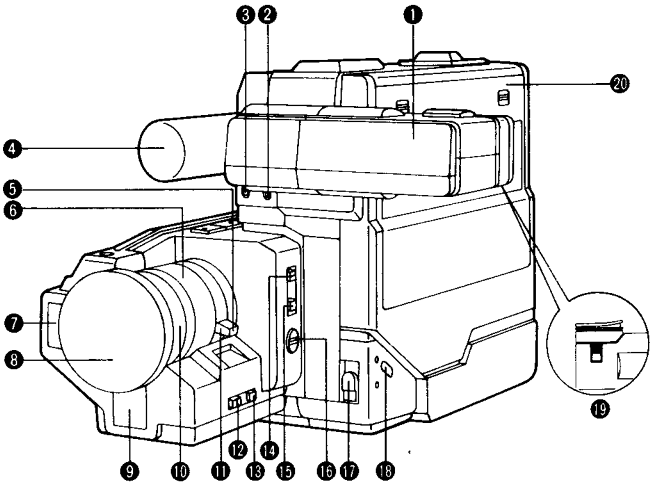
11. Standby Function

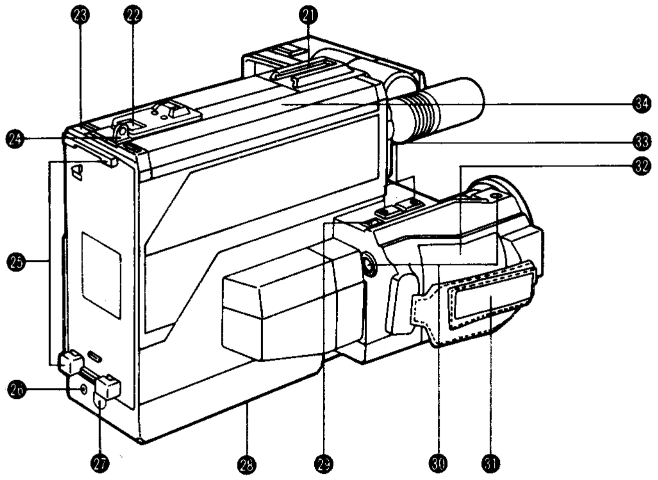
Pushing the Standby Button during every stop in shooting lasting more than a few minutes saves power and makes your battery pack last longer.

12. Recording of TV Programs is Possible via a LINE Adaptor (Optional)

Bij connecting a TV set equipped with separate video and audio output jacks via the Input Adaptor (22AV5120, optional) to the VHS Movie, you can simultaneously record a program that is being received on the TV set.

1-2. CONTROL AND COMPONENTS





❶ Electronic Viewfinder
This electronic viewfinder (EVF) is a small 1/2-inch black-and-white TV monitor that shows the actual picture being recorded or played back.

❷ Earphone Socket (EAR)

❸ Microphone Socket (MIC)

❹ Built-in Microphone

❺ Macro Button (MACRO)
This button is used for macro close-up shooting.

❻ Focus Ring
Use this ring to adjust the lens focus.

❼ White Balance Sensor Window
The sensor in this window measure the colour of the light and adjusts the white balance.

❽ White Cap
Use this cap when adjusting the white balance.

❾ Distance Measuring Window
An infra-red beam is emitted from and again received by this window to measure the distance between a subject and the VHS Movie.

❿ Lens Hood
This blocks out unwanted external light to the lens.

⓫ Manual Zoom Lever
Use this lever for manual zooming and macro close-up shooting.

⓬ Focus Mode Selector (AUTO/MANUAL)
This selector is used for programming the VHS Movie for automatic or manual focusing.

⓭ Focus Adjusting Button (AUTO)
When the Focus Mode Selector is in the "MANUAL" position, the picture will be automatically focused at every push of this button.
When the Focus Mode Selector is set to the "AUTO" position and you shoot a subject in the far distance, pressing this button will adjust the lens focus to (infinity).

⓮ White Balance Mode Selector (FULL AUTO/AUTO)
This switch is used to select the desired White Balance adjustment mode.

⓯ White Balance Set Button (SET)
When the White Balance Mode Selector is in the "AUTO" position, press this button to adjust the white balance.

⓰ Iris Close/Open Adjustment Control (IRIS)
This control can be used for manually adjusting the lens iris opening to compensate for unusual lighting conditions.

⓱ Operation On/Off switch with lamp (OPERATE)
The lamp lights up when the VHS Movie is turned on.
When condensation has formed inside the VHS Movie, this lamp flashes for a few seconds and the VHS Movie will then automatically switch itself off.

⓲ Standby Button (STAND BY)
This switch is used during longer stops in shooting to save battery power.

⓳ Eyepiece Corrector Control
This control can be used for correcting the eyepiece to your eyesight.

⓴ Cassette Compartment
Press the cassette compartment cover to close it after inserting or removing a video cassette tape.

㉑ Accessory Shoe
The Accessory Shoe is used for attaching a carrying handle.

㉒ Eject Button (EJECT)

㉓ Battery Eject Button (BATT EJECT)

㉔ Metal Fitting for Shoulder Strap
Attach the shoulder strap (optional) to this fitting.

㉕ Battery Holder
It holds the battery pack.

㉖ Remote control Socket (REMOTE)
Connect the pause remote control unit to this socket.

㉗ Adaptor Socket (ADAPTOR)
This connector is used to connect an AC adaptor (optional) or a car battery cord (optional).

㉘ Tripod Receptacle
This receptacle is used for mounting the VHS Movie on a tripod.

㉙ Rec Review Button (REC REVIEW)
Press this button after shooting a scene for automatic playback of the last few seconds of the recording to confirm that the recording is satisfactory.

㉚ Start/Stop Buttons
Press this button once to start recording, and press it again to stop recording.

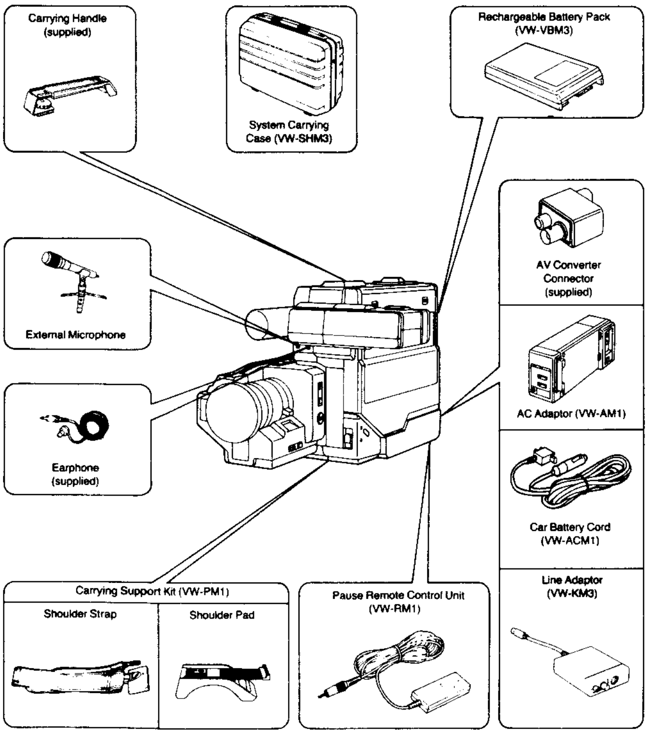
㉛ Grip Belt
This belt can be adjusted to the size of your hand.

㉜ Handgrip

㉝ Power Zoom Control
Press the "W" side of the Power Zoom Control to widen the picture angle.
Press the "T" side of the Power Zoom Control to make the picture angle narrower (telephoto shot).

㉞ Operating Controls.

1-3. VHS MOVIE SYSTEM (OPTIONAL)

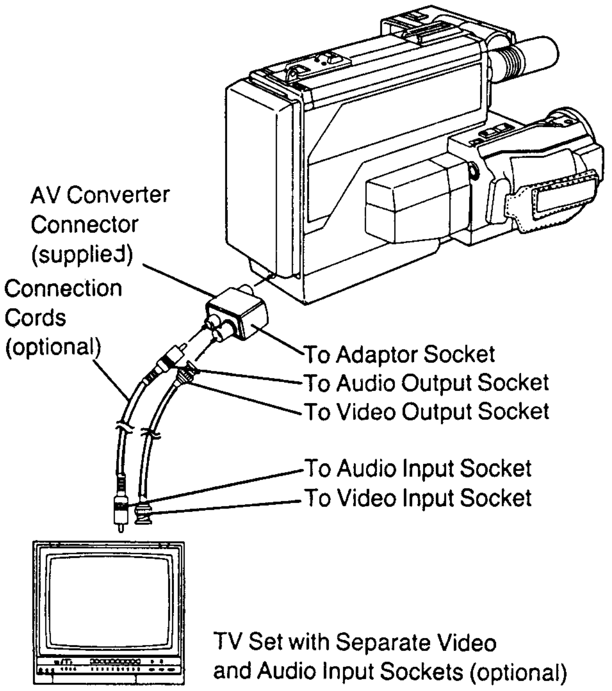

Carrying Handle (supplied)
System Carrying Case (VW-SHM3)
Rechargeable Battery Pack (VW-VBM3)
External Microphone
Earphone (supplied)
AV Converter Connector (supplied)
AC Adaptor (VW-AM1)
Car Battery Cord (VW-ACM1)
Line Adaptor (VW-KM3)
Carrying Support Kit (VW-PM1)
Shoulder Strap
Shoulder Pad
Pause Remote Control Unit (VW-RM1)

1-4. CONNECTIONS

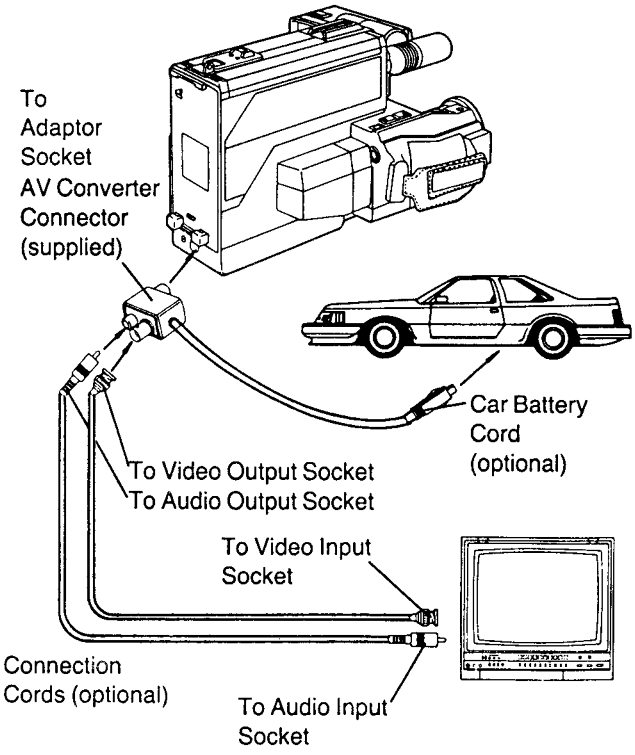
1-4-1. CONNECTIONS TO A TV

Connection to a TV set with video and audio input sockets.

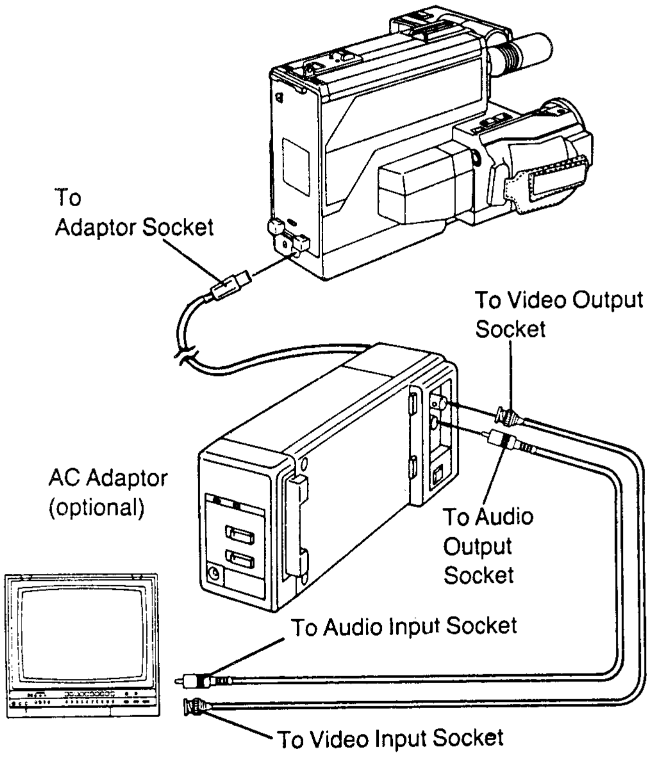
When using the battery pack as power source:


AV Converter Connector (supplied)
Connection Cords (optional)
To Adaptor Socket
To Audio Output Socket
To Video Output Socket
To Audio Input Socket
To Video Input Socket
TV Set with Separate Video and Audio Input Sockets (optional)

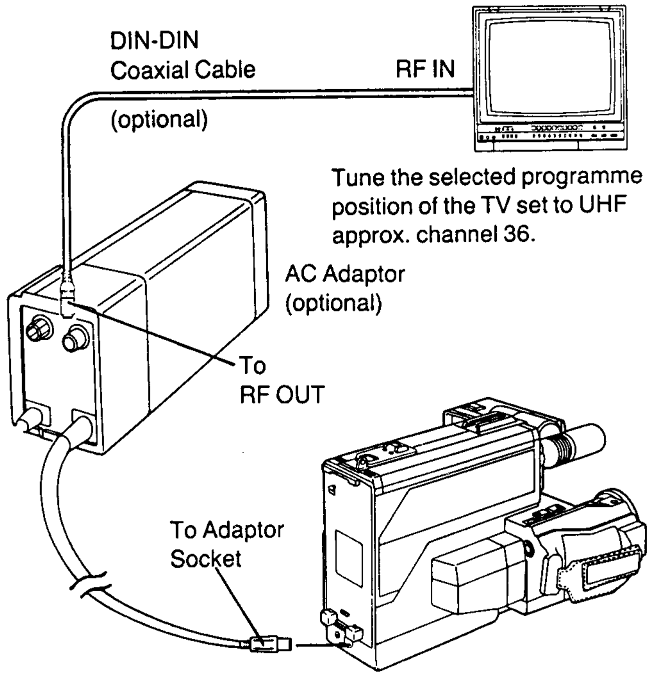
When using a car battery cord as power source:


To Adaptor Socket
AV Converter Connector (supplied)
Car Battery Cord (optional)
To Video Output Socket
To Audio Output Socket
To Video Input Socket
Connection Cords (optional)
To Audio Input Socket

When using an AC adaptor:

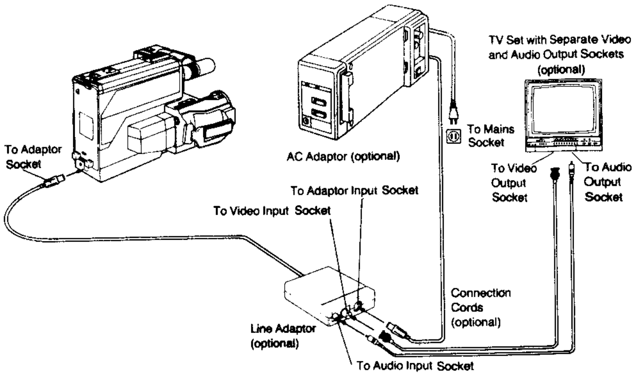

To
Adaptor Socket
To Video Output
Socket
AC Adaptor
(optional)
To Audio
Output
Socket
To Audio Input Socket
To Video Input Socket

connection to a TV set without Video and Audio Input sockets.
An AC adaptor is required.
*Refer to the Operating Instructions of the AC adaptor for detailed information.


DIN-DIN
Coaxial Cable
(optional)
RF IN
Tune the selected programme position of the TV set to UHF approx. channel 36.
AC Adaptor
(optional)
To
RF OUT
To Adaptor
Socket

Recording of to programs via Line Adaptor (optional).

- Bij connecting a TV set equipped with separate video and audio output jack via the Input Adaptor (22AV5120, optional) to the VHS Movie, you can simultaneously record a program that is being received on the TV set

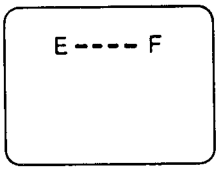

TV Set with Separate Video and Audio Output Sockets (optional)
To Adaptor Socket
AC Adaptor (optional)
To Mains Socket
To Video Output Socket
To Audio Output Socket
To Adaptor Input Socket
To Video Input Socket
Connection Cords (optional)
Line Adaptor (optional)
To Audio Input Socket

1. Use the TV channel selector on the TV set to select the programme that you wnat to record.
2. Press the Play Button while keeping the Rec/Play Button pressed.
   - To release the Standby mode and to put the VHS Movie back in the recording pause mode, press the Standby Button.
3. Press the Stop Button to finish the recording.
   - Do not turn off the TV set while recording a TV programme, if it is turned off, nothing will be recorded from that moment on.
   - While recording a TV programme, the EVF cannot be used for monitoring.
   - When the Line adapter is being used, if is not possible to record sound via an ecternal microphone.
   - It is possible to record TV programmes for a maximum of about 2 hours when using the Batytery Pack (22AV5119) as power supply, however, it is better to use the AC Adaptor (22AV5111) for long recordings.

1-5. EVF (ELECTRONIC VIEW FINDER) INDICATION

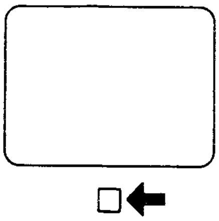
The following indications are displayed in the Electronic Viewfinder (EVF) to inform you of the operating conditions of the VHS Movie.

1. Remaining Battery Power Indication



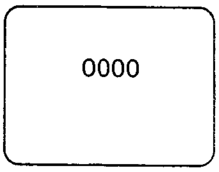
The "---" indications begin to disappear from right to left as the power of the battery pack weakens. When three "---" marks have disappeared, the warning indication "BATTERY" will be displayed.
*This indication will not be recorded on the tape.

2. Recording Indication Lamp



This lamp is lit during recording. Make sure that this lamp light up when pressing the Start/Stop Button to start a recording.

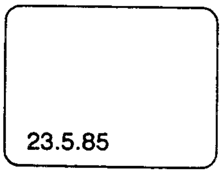
3. Tape Counter Indication



The displayed number changes according to the tape movement.
The tape counter operates even when the figures are not displayed in the EVF. When the VHS Movie is turned off, the tape counter is reset to about "0000".

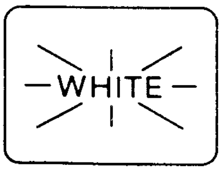
- This indication will not be recorded on the tape.

4. Date Indication

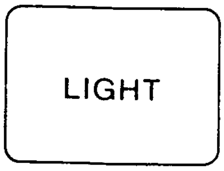


The month, date and year are displayed. It is possible to record this indication.

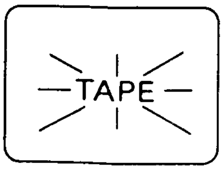
5. Warning/Alarm Indications



The white balance needs to be adjusted.

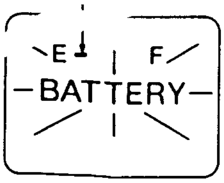


The light level is insufficient. Additional lighting is required or the recording should be made in a brighter place.

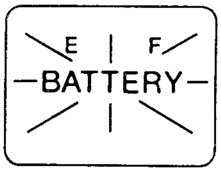


It is impossible to record because the erasure prevention tab of the cassette is not intact.

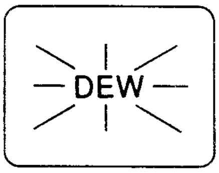
Remaining Battery Power Indicati



There is little battery power left. The VHS Movie will turn itself off in a few minutes. Replace the battery pack.



There is no battery power left. The VHS Movie will turn itself off in a few seconds.

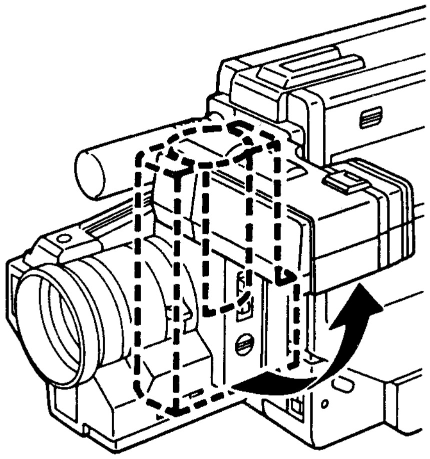


When condensation has formed inside the VHS Movie, the "DEW" indication in the EVF will flash and a few seconds later, the unit will turn itself off to protect the tape and the video heads.

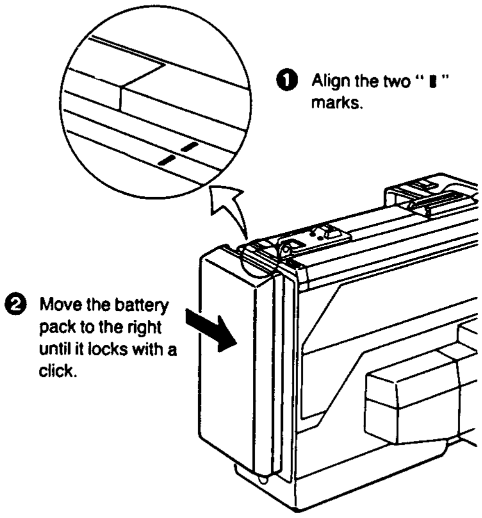
- Some warning indications may blink alternately to warn you of each of the conditions they indicate.

1-6. CAMERA RECORDING

1. Adjust the Electronic Viewfinder (EVF) in the horizontal position.

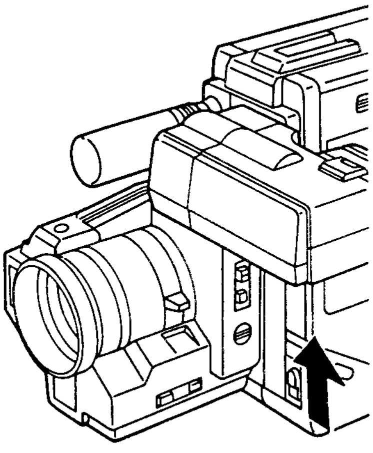


2. Attach a fully charged battery pack.

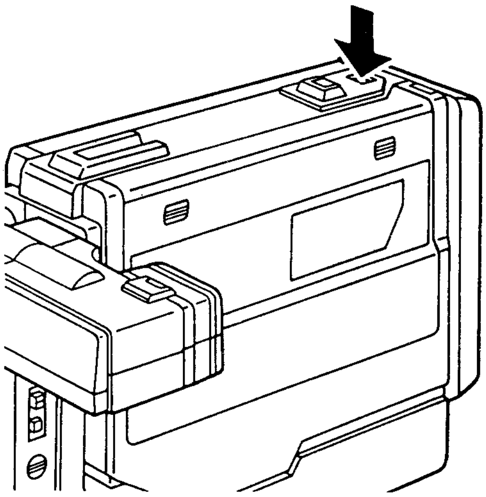

❶ Align the two " ▮ " marks.
❷ Move the battery pack to the right until it locks with a click.

3. Press the Operating On-Off switch once to turn the VHS Movie on.

- The corresponding lamp should be lit.
- To turn the VHS Movie off, press the operation On/Off switch once again.

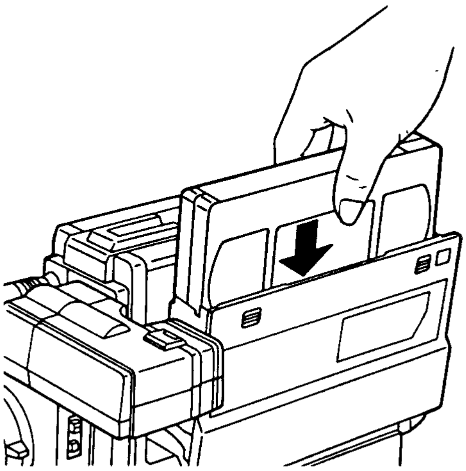


4. Press the Eject Button to open the cassette compartment.



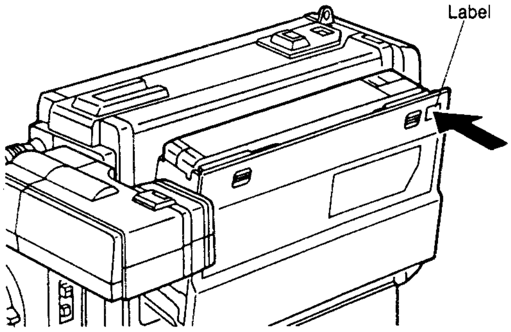
5. Insert a video cassette with the erasure prevention tab intact.

- The window side of the cassette should face outside and the arrow mark point downward.



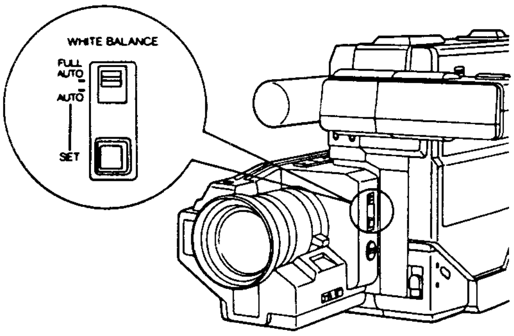
6. Press the cassette compartment cover until it locks with a click.

- A few seconds later, the VHS Movie will change over to the recording pause mode.



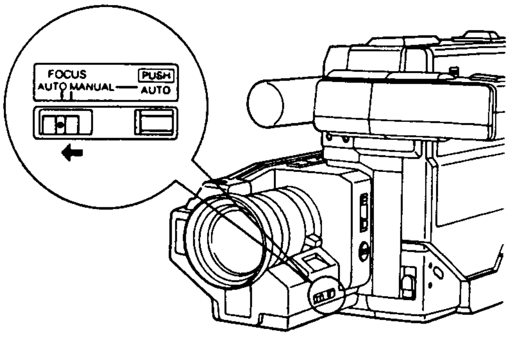
If the VHS Movie is left in the pause mode for more than 6 minutes:
The VHS Movie will automatically switch over to the standby mode (viewfinder is off) to protect the tape and save battery power. To switch over to the recording pause mode (viewfinder is on) again, press the Standby Button.

7. Set the White Balance Mode Selector to "FULL AUTO" position.



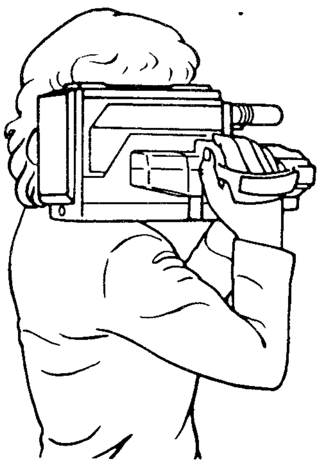
The Full Auto mode may not be able to provide correct white balance adjustment. To obtain exact white balance in such cases, adjust as described in "Adjusting the White Balance in the AUTO Position"

8. Set the Focus Mode Selector to "AUTO" position.



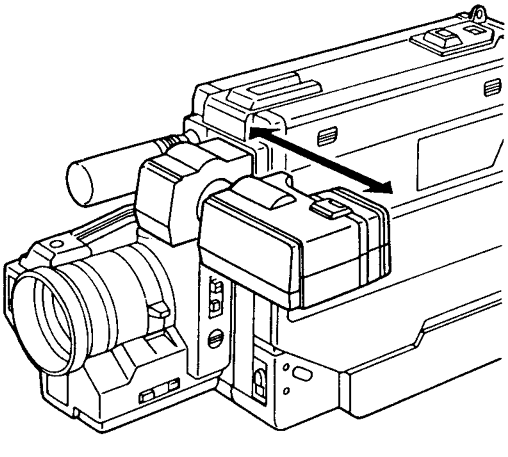
The Auto Focus system will not be able to provide exact focus adjustment under some shooting conditions. In such cases, adjust the focus in the Manual Mode as described in "Focusing in the MANUAL Mode".

9. Place the VHS Movie on the shoulder to get ready for shooting.

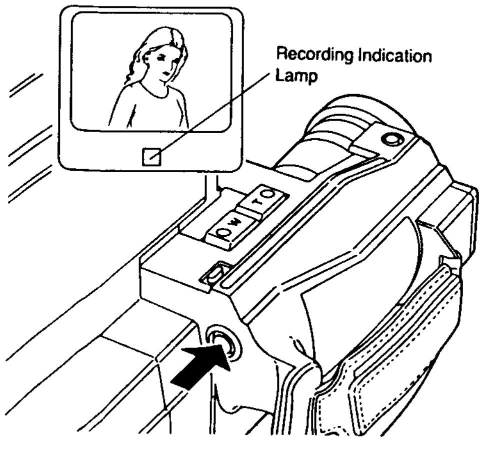


- Grasp the Handgrip and adjust the length of the Grip Belt (Velcro tape closure) to the size of your hand.

10. Pull the EVF outward and adjust for most comfortable viewing.

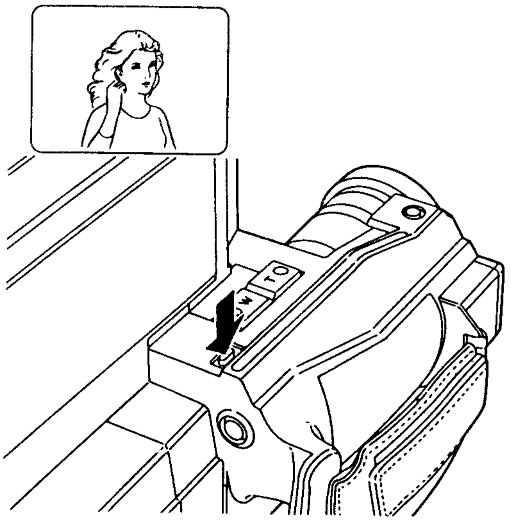


11. Press the Start/Stop Button.
- The Recording Indication Lamp in the EVF lights up and the recording starts.
- When the Start/Stop Button is pressed again, the lamp goes out, recording is stopped and the VHS Movie is in the recording pause mode.



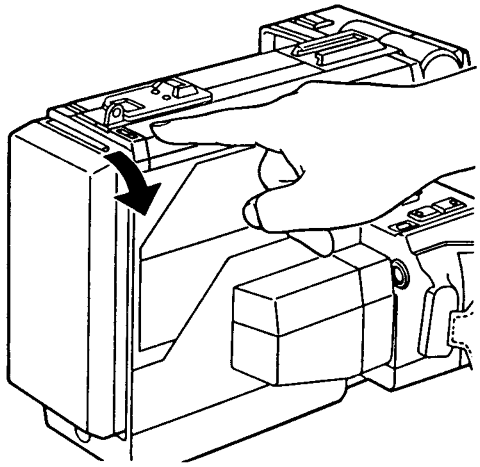
- When the tape reaches its end during recording, the VHS Movie automatically switch over to the stop mode.

12. Press the Rec Review Button while the VHS Movie is in the pause mode.
- The last 2 seconds of the recorded scene are played back and the VHS Movie will again stop in the recording pause mode.

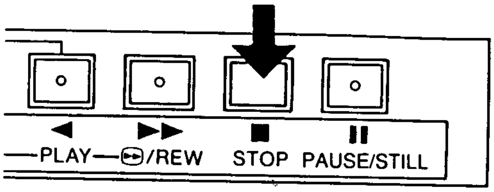


1-7. CAMERA PLAYING BACK

1. Open the cover of the operating control compartment on top of the VHS Movie.

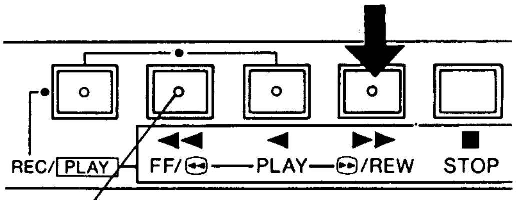


2. Press the Stop Button.



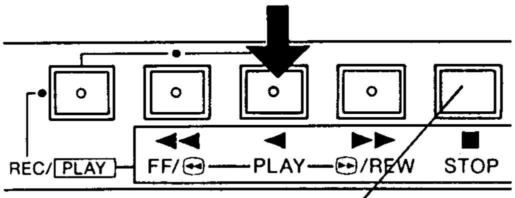
- When the VHS Movie is in the stop mode during use with the AC adaptor (optional) as power source, it will remain on as long as the AC adaptor is on.
- When the VHS Movie is in the stop mode than 6 minutes when the rechargeable battery pack or the car battery cord (both optional) is used as power source, it will automatically switch over to the standby mode to save battery power.

3. Press the Rewind/Review Button to rewind the tape.
- The tape will stop automatically at the beginning of the. tape.



To wind the tape forward rapidly, press the Fast Forward/Cue button.
- The tape will rewind automatically when it reaches its end.

4. Press the Play Button.
- The playback starts.
- The tape will rewind automatically when it reaches its end.



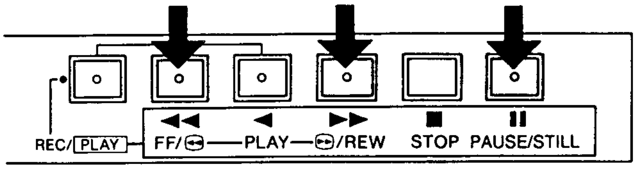
To stop the playback,press the Stop Button.

5. Special playback.
Cue Playback

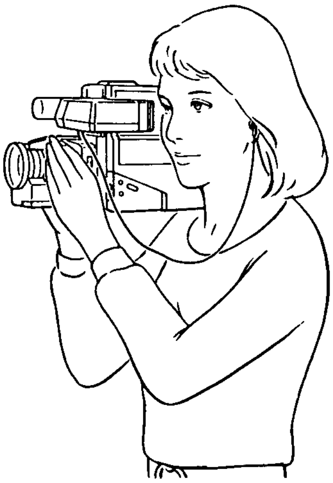
When the Fast Forward/Cue Button is kept pressed while the VHS Movie is in the playback mode, the tape will be played back in forward direction at about 3 times normal playback speed.

Review Playback
When the Rewind/Review Button is kept pressed while the VHS Movie is in the playback mode, the tape will be played back in reverse direction at about 3 times normal playback speed.

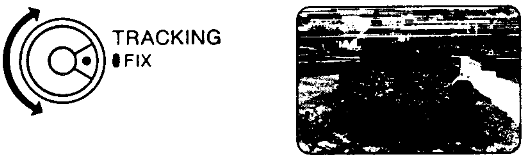
Pause/Still Playback
When the VHS Movie is in the playback mode, press the Pause/Still Button to view a still pecture. To continue the normal playback, press this button again.



- It is possible to watch the picture in the Electronic Viewfinder (EVF).
It is also possible to listen to the sound by using the earphone (supplied).



Tracking adjustment Control

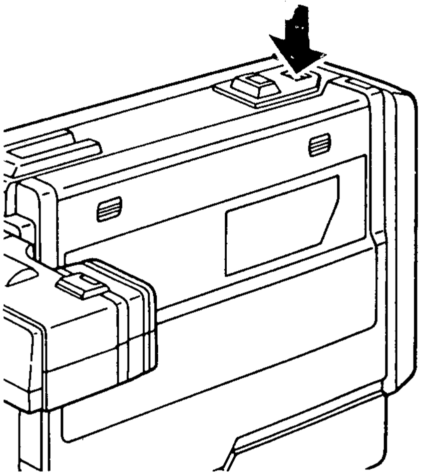


- When the playback picture contains distortions as shown in the picture above,they can be eliminated by turning this control.
- When playing back a tape recorded on another video recorder, it may not be possible to completely eliminate these distortions.

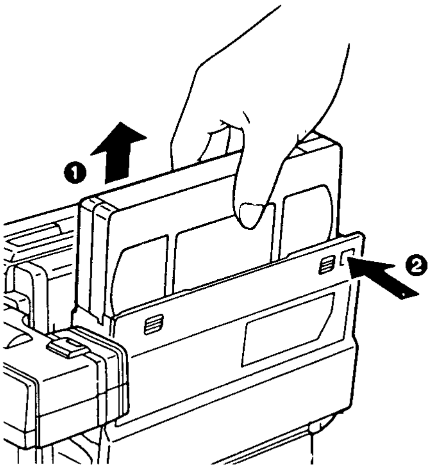
A tape recorded on a VTR in the LP mode cannot be played back on the VHS Movie. (If playback is attempted, it may be stopped automatically.)

AFTER FINISHING PLAYBACK

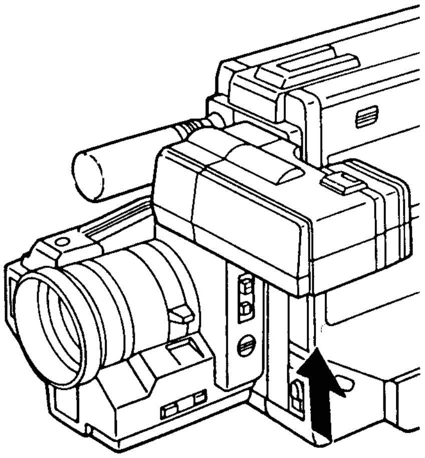
Press the Eject Button.
- The Cassette Compartment Cover will open in about 10 seconds after the tape has been retracted into the cassette.



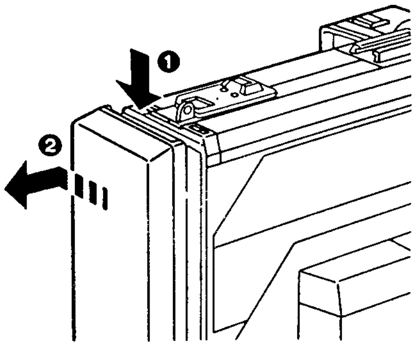
Take out the video cassette and press the cassette compartment cover to close it.



Press the Operation On/Off Switch once to turn the VHS Movie off.



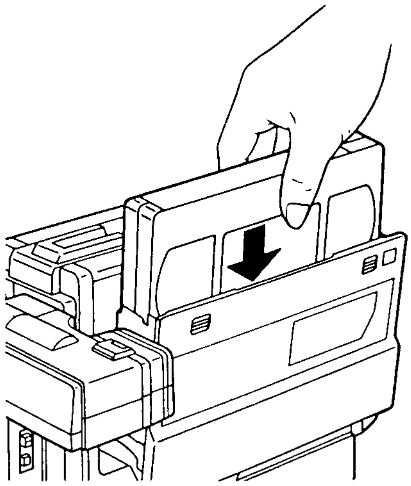
Keep the Battery Eject Button pressed and move the battery pack to the left.



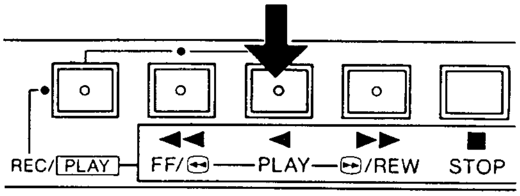
- When the battery pack is removed during recording or playback, the tape remains wound around the head cylinder in contact with the video heads and may become damaged. Therefore, be sure to turn the VHS Movie off before removing the battery pack.
- Be sure to recharge the battery pack before storing it.

PLAYBACK OF A VIDEO, CASSETTE WITHOUT ERASURE PREVENTION TAB.

Press the Operation On/Off Switch once to turn the VHS Movie on. Then, press the Eject Button to open the cassette compartment cover.



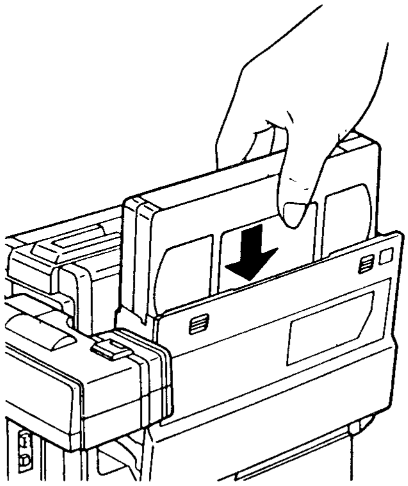
Press the Play Button to start the playback.



- The REC/PLAY indicator flashes until the Play Button is pressed.

PLAYBACK OF A VIDEO CASSETTE WITH THE ERASURE PREVENTION TAB INTACT.

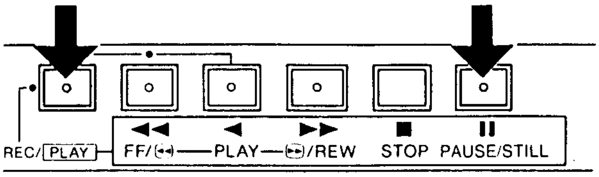
Press the Operation On/Off Switch once to turn the VHS Movie on. Then, press the Eject Button to open the cassette compartment cover.



Press the REC/PLAY Button

- The VHS Movie is now in the still playback mode.

Press the Pause/Still Button to start the playback.



1-8. CAMERA SHOOTING

1-8-1. SHOOTING PROCEDURES

Befor shooting

The colours of the pictures recorded on the VHS Movie differ according to the colour temperature under which the shooting is done. The VHS Movie-like any video camera-responds differently depending on the weather or the time, even under the seemingly same sunlight. The adjustment necessary to assure natural colour rendition is called "white balance adjustment". Adjust the white balance to the light source before every shooting start.

White Balance Setting

- To assure recordings with natural colours, be sure to adjust the white balance whenever the VHS Movie is turned on and when the light source is changed.

- For best white balance adjustment, it is recommended that the "AUTO" setting mode be used.

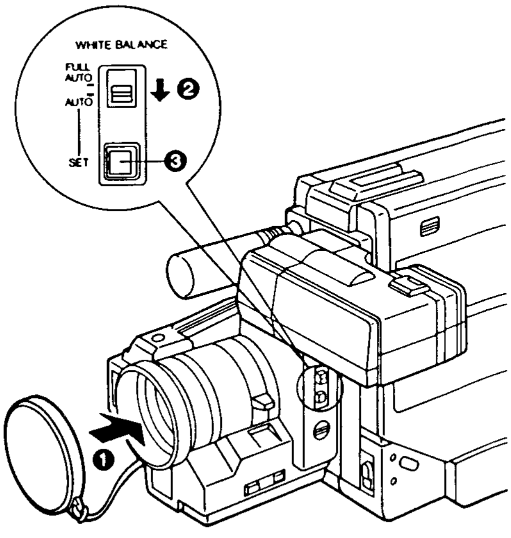
- The white balance adjustment should not be made immediately after turning the VHS Movie on. For very precise white balance adjustment, wait several minutes, before adjusting it.

- Readjust the white balance whenever the lighting changes (e.g. when the shooting location is changed from indoor to outdoors, or vice versa) or after turning the VHS Movie off and on again. It is also possible to compensate for the changing lighting conditions by using a suitable filter.

- When shooting under sunlight, the white balance setting is to be performed with the white cap on the lens exposed to sunlight, and when shooting in the shade, the white balance setting must be made with the VHS Movie in the shade.

- The white balance adjustment should be done with the Iris Close/Open Adjustment Control set to the centre click position.

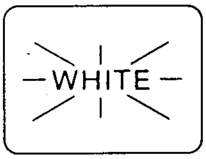
ADJUSTING THE WHITE BALANCE IN THE AUTO POSITION.



❶ Place the White Cap over the lens. If you don't have the White Cap with you, aim the VHS Movie at some white object and zoom in on it so that it fills the entire picture.

❷ Set the White Balance Mode Selector to AUTO.

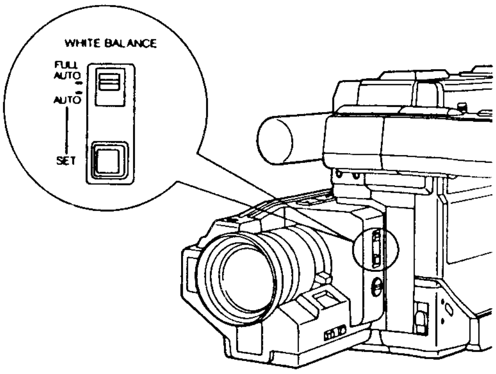
❸ Press the White Balance Set Button.



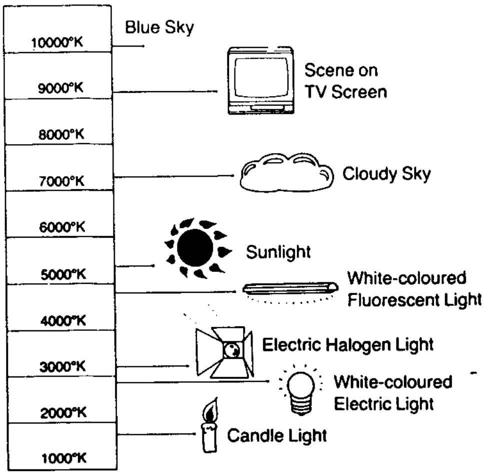
After adjusting the white balance, the blinking "WHITE" indication in the EVF will disappear.

ADJUSTING THE WHITE BALANCE IN THE "FULL AUTO" MODE.

Set the White Balance Mode Selector to "FULL AUTO" position.



COLOUR TEMPERATURE OF THE LIGHT SOURCE.



The mature of the light is called colour temperature and Kelvin (Degree Kelvin) is the unit used to measure it. The higher its value becomes, the more the colour turns to blue, and the lower it becomes, the more it turns to red.
(The colour temperature is not directly related to the brightness.)
Colour temperature range in which adjustment is possible.
FULL AUTO Mode 2800-5600Degree Kelvin
AUTO Mode 2500-7800Degree Kelvin

CAUTIONS
In the Full Auto mode, the sensors built into the front the VHS Movie detects the colours of the illumination of the scene and automatically adjusts the white balance. In the following shooting conditions, the Full Auto mode may not provide exact white balance adjustment. Use the Auto mode in such cases.

1. When the illumination of the subject is different from the light that falls on the VHS Movie.
2. When either the VHS Movie or the subject is n the shade.
3. When extremely bright light sources are used, such as mercury-vapor lamps, natrium lamps or some types of fluorescent lamps.
4. When the illumination is not bright enough (if the brightness on the sensor window is less than 7 lux).
5. When the scene has strong red-coloured illumination, e.g. during sunrise and sunset.
6. When there is some other light source that is outside the sensing range of the white balance adjustment sensors, e.g. snowy landscape, cloudy weather, incandescent light and candle light.
7. When there is some object placed in front of the sensor window that prevents light from reaching it.
8. When shooting in the macro range, the Full Auto mode does not operate. therefore, use the auto mode to adjust the white balance.

1-8-2. AUTO FOCUS FUNCTION

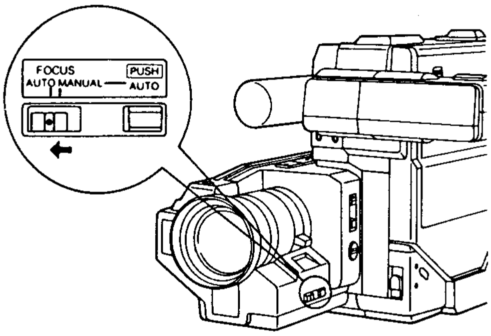
An infra-red beam is emitted continuously through the lens of the VHS Movie, and the Auto Focus system determines the distance and immediately adjusts the lens focus based on the angle at which the beam is reflected back to the Distance Measuring Window. For special effects and special shooting conditions, focusing in the manual mode is also possible.

AUTO FOCUS OPERATING MODE.

- When the Battery Pack or the Car Battery Cord is used as power source, the Auto Focus will operate only in the recording and recording pause modes, in order to save battery power.
- When the AC Adaptor is used as power source, the Auto fOcus function will also operate in the stop mode even without a cassette inserted.

FOCUSING IN THE AUTO MODE.
Set the Focus Mode Selector to "AUTO".

- While watching the picture in the EVF, aim the VHS Movie at the subject on which you want to focus.



CAUTIONS

1. When the Auto Focus mode is used durind, shooting, do not turn the Focus Ring and take care not to cover the Distance Measuring Window.
2. When strong light enters the Distance Measuring Window, the Auto Focus system will not be able to function precisely.
3. The focus will be adjusted onthe subject in the centre of the picture.
4. When using the Macro function, the focus must be adjusted manually, because the Auto Focus does not operate in the extreme close-up range.
5. To save battery power,keep the Focus Mode Selector in the "MANUAL" position except during actual shooting.
6. The Auto Focus system will not be able to function precisely when special-effect lenses or filters are used, therefore, adjust the focus manually in such a case.
7. To obtain correct Auto Focus adjustment, the diameter (reflection surface) of the aimed at subject must be larger than 6 cm when shooting from a distance of 3 meters.

8. If some infra-red wireless remote control unit is directed at the Distance Measuring Window during Auto Focus operation, inexact focus adjustment may result.

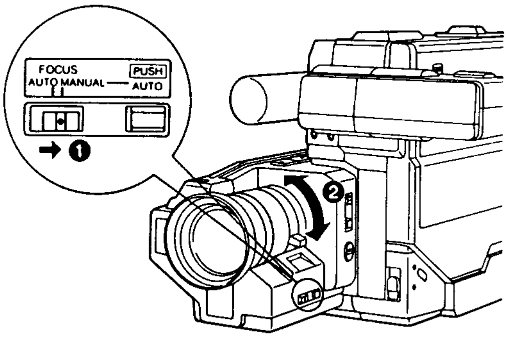
In the followimg shooting conditions, the Auto Focus system will mot be able to provide stable and exact focus adjustment. In such a case, set the Focus Mode Selector to "MANUAL" and adjust by hand with the Focus Ring.

1. Shooting a subject through glass.
2. Shooting a subject with a part of it near and another part far from the VHS Movie.
3. Shooting under adverse environmental conditions such as dense fog, snow, rain, cigarette smoke, etc.
4. Shooting a flat subject such as a wall or poster at an angle.
5. Shooting a continuously moving subject such as a crowd of walking people.
6. Shooting subjects that do not easily reflect infra-red rays, such as black surfaces or water.
7. Shooting subjects with shiny suifaces.
8. Shooting subjects with the border between upper and lower parts having strong contrast being in the centre of the EVF.

1-8-3. FOCUSING IN THE MANUAL MODE, ADJUSTING FOCUS RING

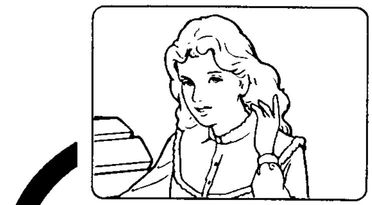
❶ Set the Focus Mode Selector to "MANUAL".

- Zoom in on the subject until et fills the entire picture.
- Turn the Zoom Ring all the way to the TELE position.

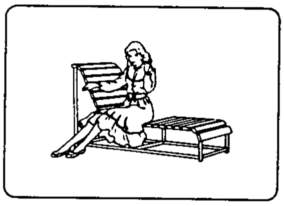


❷ Turn the Focus Ring to adjust the focus. It is possible to zoom in on the subject by pressing the T-side of the Power Zoom Control.
When the Auto Button is dept depressed while the Focus Mode Selector is in the MANUAL position, the Focus will be adjusted automatically as long as this button is pressed.

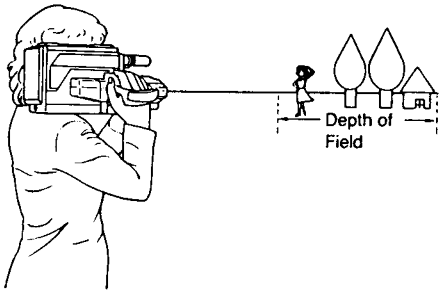
- Be sure to zoom in on the subject to adjust the focus.



The subject remains in focus even when you zoom all the way to the WIDE position.



DEPTH OF FIELD.



Depth of field is the range of distances within which objects are in focus i.e. are sharp.

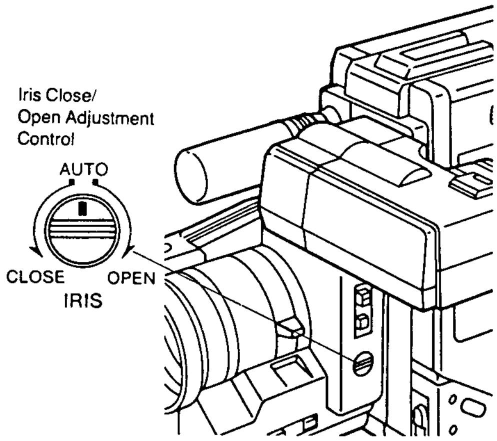
- The depth of field depends on the focus distance setting of the lens, the distance to the subject and iris value. When the lens is set to TELE position, the depth of field is small and only a small range of distances is in focus. On the other hand, when the lens is set to the WIDE position, the depth of field is greater and a large range of distances is in focus.

Picture with large depth of field.

Picture with little depth of field.

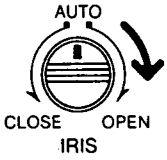
1-8-4. IRIS CLOSE/OPEN ADJUSTMENT

The VHS Movie features and Iris Close/Open adjustment Control that lets you override the auto iris in special lighting situations.
Normally, the iris is automatically adjusted according to the amount of light entering the lens. However, when a subject is backlit or if the picture too bright, adjust the Iris Close/Open adjustment Control.
For normal lighting conditions, this control should be set to the centre click position.(automatic adjustment)



When a Subject is backlit

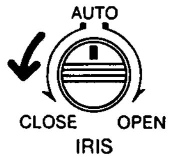
Turn in the "OPEN" direction.



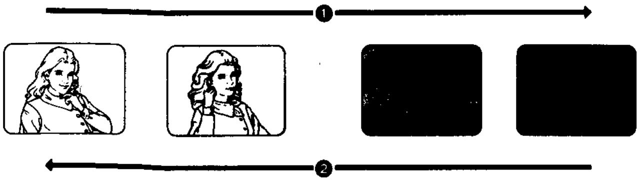
When shooting a backlit subject be careful that the lens is not aimed at extremely bright light.

When the picture is too bright.

Turn in the "CLOSE" direction.



Fade-in and fade-out operation is possibly by using the Start/Stop Button together with the Iris Close/Open adjustment Control.



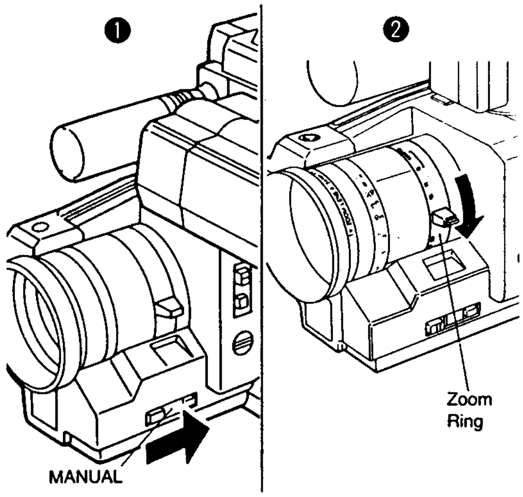
❶ To fade out a picture, turn the control from the centre click position to the "CLOSE" position.

❷ To fade in a picture, turn the control from the "CLOSE" position to the centre click position.

1-8-5. MACRO CLOSE-UP SHOOTING

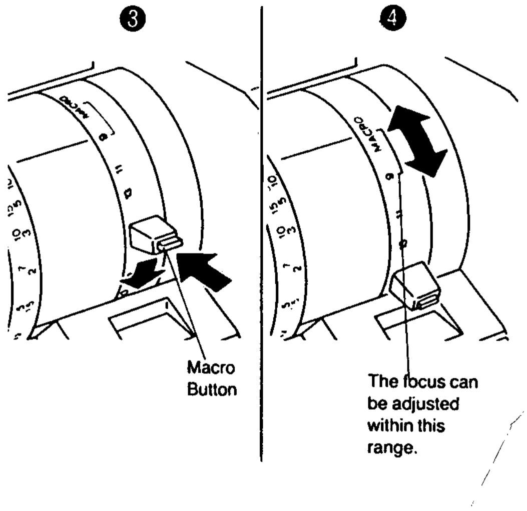
❶ When shooting in the macro range, the Auto focus mode does not operate. Therefore, use the "MANUAL" mode to adjust the focus.

❷ Turn the Zoom Ring all the way clockwise.



❸ Press the Macro Button and again turn the Zoom Ring clockwise.

❹ Turn the Zoom Ring slowly and focus on the desired object.



1-8-6. SOUND RECORDING

BULIT IN MICROPHONE AND EXTERNAL MICROPHONE SOCKET

❶ External Microphone Socket

- In normal shooting conditions, the built-in microphone is used. However, when you want to record sound in a large area or the singing of wild birds which you cannot get close to with the VHS Movie, and external microphone (optional) may be more suitable.
- When the recording is likely to be impaired by external noise of if the operating noise of the VHS Movie is offensive to the ear, use an external microphone.

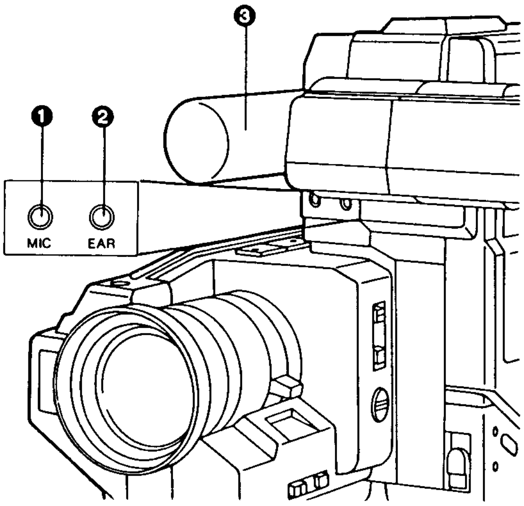
When and external microphone is connected, the built-in microphone is automatically switched off.

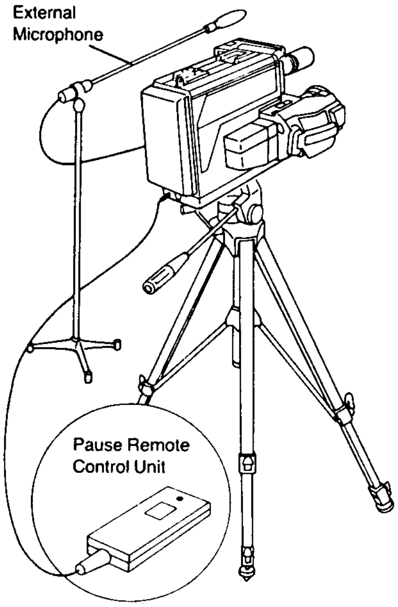
❷ Earphone socket

The sound being picked up by the microphone and being recorded can be monitored by connecting the earphone (supplied)

❸ Built-in Microphone

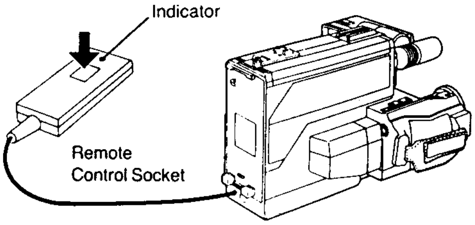
the built-in microphone is a sensitive unidirectional condenser mike.




External Microphone
Pause Remote Control Unit

Pause Remote Control Unit (optional)

- This pause remote controller is designed exclusively for the VHS Movie and allows operating recording start and stop from some distance. this is convenient when shooting with the VHS Movie mounted on a tripod.


Indicator
Remote Control Socket

- Press this button to start recording when the VHS Movie is in the recording pause mode. Press it again to change the VHS Movie over to the recording pause mode.
- The indicator is lit during recording.

2. WHAT ARE THE DIFFERENCES?

2-1. GENERAL

In addition to the technical merits of the conventional VHS Movie (VKR6800), this model (VKR6810) highlights other superlatives, e.g. Auto Focus system, Auto White tracking Circuit, facilities for recording external signal via Input Adaptor (22AV5120), etc. Consequently, some circuits are developed and improved versions of their conventional equivalents.

This section is assigned to explain in details some of these new developments in order to familiarize service technicians with the technical differences of VHS Movie Model VKR6810.
The mains circuits of VKR6810 are identical with those of VKR6800. (Refer to the Training Manual of VKR6800).

2-2. SYSTEM CONTROL CIRCUIT

2-2-1. DEW DETECTION SYSTEM

In addition to the conventional Dew Sensor (1) (near the cylinder-unit), another Dew Sensor (2) is employed (in the cassette compartment side) in order to improve on the sensitivity for detection of moisture.

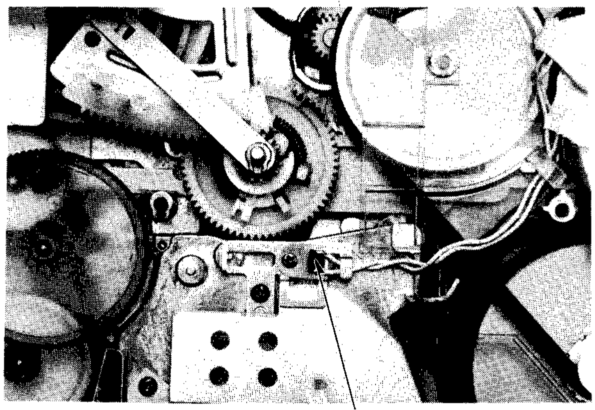

Dew Sensor 1

Fig.1

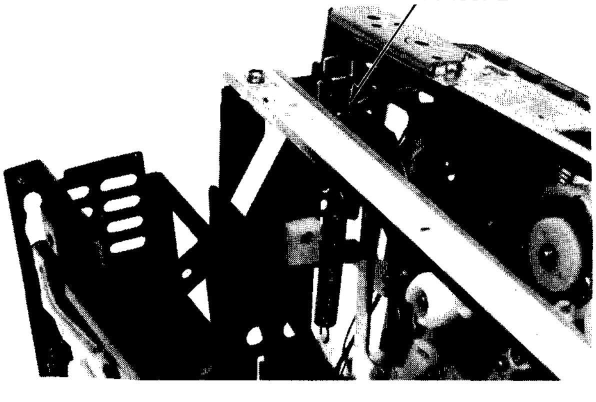

Dew Sensor 2

Fig.2

The circuit for Dew Sensor's (1) circuit is the same as the conventional model (see Fig.3) but Dew Sensor's (2) circuit is different and consists of Dew Sensor (2), Q6013 and QR6021.

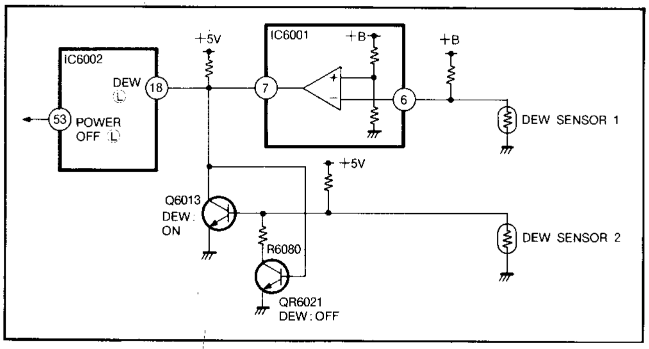

IC6002
DEW (L)
18
53
POWER OFF (L)
+5V
IC6001
+B
7
6
+B
DEW SENSOR 1
+5V
Q6013 DEW ON
R6080
DEW SENSOR 2
QR6021 DEW: OFF

Fig.3

At normal conditions, the Dew Sensor is connected in parallel with R6080 to the GND. Because, QR6021 is turning on.
At high humidity, its resistance increases, and when it exceeds a pre-determined level, Q6013 is turned on and a low level signal is sent to Pin 18 of IC6002.
Accordingly, a "Power-off" low level signal is generated from Pin 53 of IC6002 to cut off the power.
And QR6021 is turned off due to turn off the Q6013.

When normal conditions are recovered, while QR6021 continues to turn OFF , the Dew Sensor is no longer connected in parallel with R6080 to the GND.
Thus, upon recovering normal conditions, resistance of Dew Sensor 2 will be lower than during the formation of dew.
In other words, when normal conditions are recovered, is lower humidity than when the dew is formed.

2-2-2. CAMERA/AF ON/OFF CONTROL

The output of Pin 41 (see Fig.5) of IC6002 decides the ON/OFF mode of the power circuits of CAMERA and AF.

IC6002 Pin 41	OPERATION	MODE
High	CAMERA: OFF AF : OFF	STAND-BY PLAY (V-V)
Middle	CAMERA: ON AF : OFF	STOP (E-E) (used Battery)
Low	CAMERA: ON AF : ON	REC/PLAY STOP (used AC Adaptor)

Fig.4

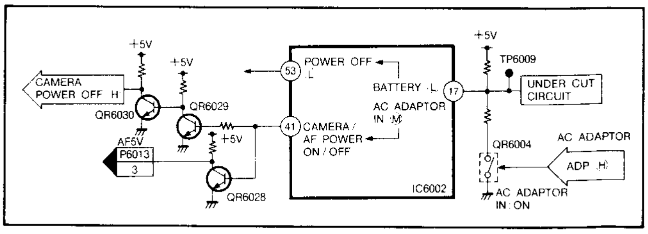

+5V
+5V
CAMERA POWER OFF (H)
QR6030
QR6029
AF5V
P6013
3
+5V
QR6028
53
POWER OFF (L)
BATTERY (L)
AC ADAPTOR IN (M)
41
CAMERA / AF POWER ON / OFF
IC6002
17
+5V
TP6009
UNDER CUT CIRCUIT
QR6004
AC ADAPTOR
ADP (H)
AC ADAPTOR IN: ON

Fig.5

When the AC adaptor is connected, ADP high signal is sent to QR6004 from the adaptor. The QR6004, accordingly is turned on and the Pin 17 of IC6002 is brought to mid-level 2.0V. Output at Pin 41 will then be decided depending on the operation mode (Rec, Play, FF, Rew, etc...) and the connection of the AC adaptor.

2-2-3. BACK-UP CIRCUIT

Even when the power switch is turned off, the unit will continue to retain the character information by utilizing the back-up circuit. (see Fig.6)

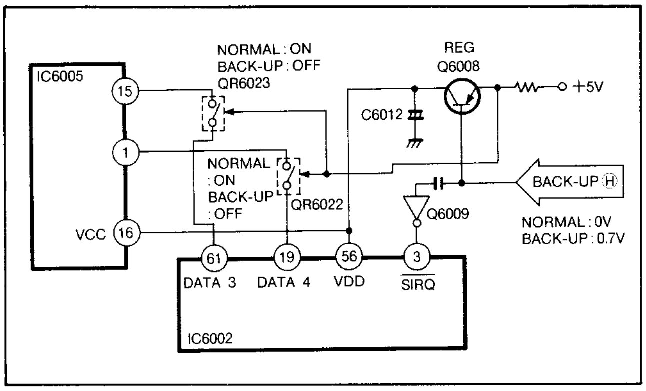

IC6005
NORMAL : ON
BACK-UP : OFF
QR6023
REG
Q6008
+5V
C6012
15
1
NORMAL : ON
BACK-UP : OFF
QR6022
BACK-UP H
Q6009
NORMAL : 0V
BACK-UP : 0.7V
VCC
16
61
19
56
3
DATA 3
DATA 4
VDD
SIRQ
IC6002

Fig.6

Normally, +5V voltages are supplied to VDD and VCC of IC6002 and IC6005 through regulator Q6008. When the power switch is turned off, or in case of power failure, a back-up high signal is sent from the power supply section to Q6008 and Pin 3 of IC6002 through Q6009 and Pin 3 of IC6002 is brough to low-level in order to halt the operation of IC6002. Accordingly, Q6008 goes off.
Meanwhile, instead of the +5V, charged voltage from C6012 is supplied to IC6002 to keep on holding the character information. Also, in order to improve on the power consumption, charged voltage from C6012 is also supplied to IC6005. (If IC6005 is not backed up, the currents from IC6002 flow to IC6005) As the same purpose those QR6023 and QR6022 are cut.

2-2-4. CAMERA/LINE INPUT SWITCHING CIRCUIT

External signal (e.g. TV signal, etc.), can be recorded by using the Input adaptor (AV5120). Normally camera signal is fed to the recording circuit.
When the Input Adaptor is connected, its signal will be fed as the signal to the recorder. The switching operation is carried out by the switching circuit shown in Fig. 7.

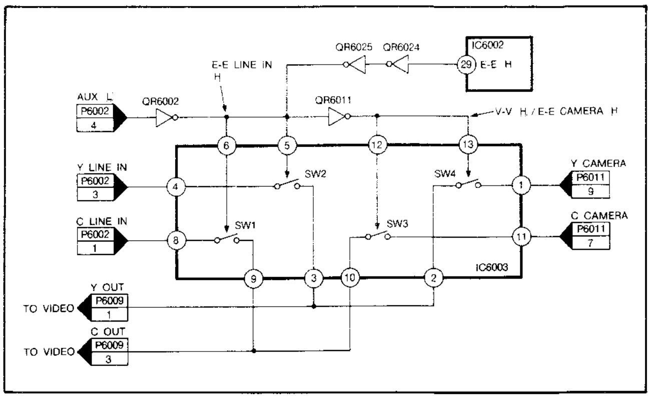

QR6025
QR6024
IC6002
29
E-E H
E-E LINE IN
H
AUX L
P6002
4
QR6002
QR6011
V-V H / E-E CAMERA H
6
5
12
13
Y LINE IN
P6002
3
4
SW2
SW4
1
Y CAMERA
P6011
9
C LINE IN
P6002
1
8
SW1
SW3
11
C CAMERA
P6011
7
IC6003
9
3
10
2
Y OUT
TO VIDEO
P6009
1
C OUT
TO VIDEO
P6009
3

Fig.7

Y signal (Luminance) and C signal (Chrominance) from CAMERA section are fed into Pins 1 and 11 of IC6003, while line-in signals are fed into Pins 4 and 8 of the same IC. When the Line Adaptor is connected, AUX low-level siganl from it is fed into QR6002.
Henceforth, high-level siganl is applied to Pins 6 and 5 to turn on Switches 1 and 2. Accordingly, line-in signals are fed into the Video circuit via Switches 1 and 2.

When the Input Adaptor is not connected and E-E mode (STOP/FF/REW) is set, Switches 3 and 4 are turned on. CAMERA signals are then fed to the Video circuit via Switches 3 and 4. Further, at V-V mode, even if the Input Adaptor is at V-V mode, even if the Input Adaptor is connected, Switches 3 and 4 are turned on.
When V-V mode is carried out, CAMERA lines are connected but signals from CAMERA to the Video circuit are cut off.
If line-in signals are connected to the Video circuit during V-V mode, signals from the Input adaptor may influence the Video signals.

2-3. SERVO CIRCUIT

The new ICs (IC2001: MN6179VBES, IC2002: AN3792S) are developed in this model.

IC2001 is servo control IC. IC2002 is Tracking Mono Multi viblator and Amplifier IC.

Even these above new ICs are used,circuit of inside is based on NV-M1 and other ICs and circuits are same as NV-M1(refer to Training Manual for NV-M1).

2-3-1. CYLINDER SERVO

The simplified block diagram is shown in Fig.8.

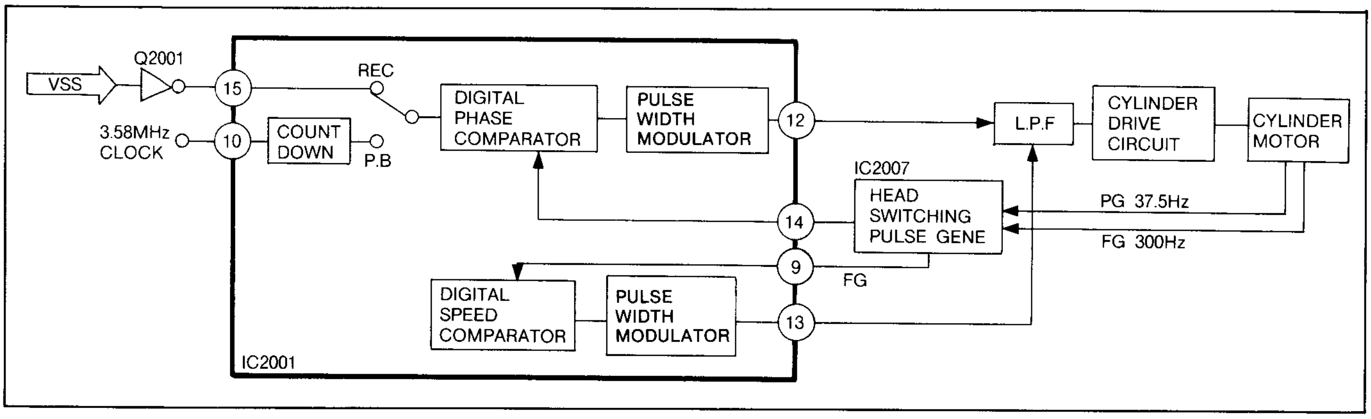

VSS
Q2001
15
REC
3.58MHz
CLOCK
10
COUNT DOWN
P.B
DIGITAL PHASE COMPARATOR
PULSE WIDTH MODULATOR
12
L.P.F
CYLINDER DRIVE CIRCUIT
CYLINDER MOTOR
IC2007
HEAD SWITCHING PULSE GENE
PG 37.5Hz
FG 300Hz
14
9
FG
DIGITAL SPEED COMPARATOR
PULSE WIDTH MODULATOR
13
IC2001

Fig.8

In order to place the video tracks (video signal) on the tape in a specific pattern. Thus it is necessary to have the head cylinder motor servo-controlled.
Servo action assures that vertical. sync occupies approx. 10H (horizontal lines) from the beginning of the track.
Since vertical sync is placed at the same spot on every track, it would seem logical to lock the servo the head cylinder motor spins at 2250 RPM.
To make sure that vertical sync is recorded at 10H on to the video track, the heads must be phase-locked to the video signal.
The servo system is composed of two sections: phase and speed control systems (See Fig.8)

1. Cylinder Speed Comparator

To achieve speed control, the servo circuits use a digital speed comparator.
The Cylinder Motor delivers a sine-wave signal with cylinder speed related frequency.(FG signal)
The sine-wave signal is converted to a square wave. The Cylinder FG signal is applied to the digital speed comparator (Fig.9). The cylinder FG frequency is then converted into a DC voltage by the digital speed comparator, the PWM circuit (Pulse Width Modulation) and a low pass filter.

First, the cylinder FG frequency signal is converted into a variable pulse width by the digital speed comparator and the PWM circuit, then applied to the low pass filter.
Filtering the PWM output will yield a DC voltage, which in turn, is used to control the speed of the cylinder motor.
Normally, when the cylinder is running at the correct speed, a 50% duty cycle square wave is applied to the low pass filter. The motor can then be kept at the proper speed. If the cylinder motor speed varies, the PWM output and the output DC voltage are changed (Fig.10).

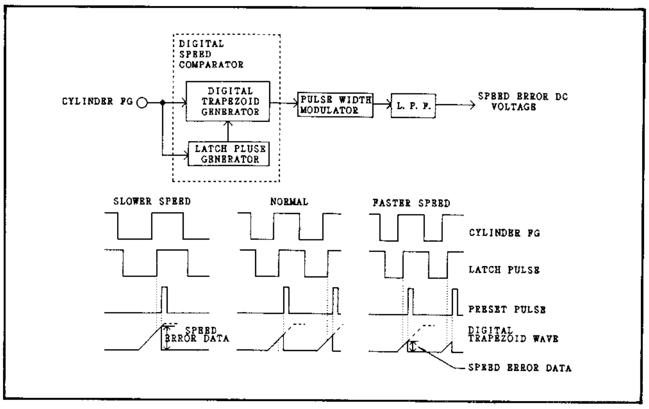

DIGITAL SPEED COMPARATOR
CYLINDER FG
DIGITAL TRAPEZOID GENERATOR
LATCH PLUSE GENERATOR
PULSE WIDTH MODULATOR
L. P. F.
SPEED ERROR DC VOLTAGE
SLOWER SPEED
NORMAL
FASTER SPEED
CYLINDER FG
LATCH PULSE
PRESET PULSE
SPEED ERROR DATA
DIGITAL TRAPEZOID WAVE
SPEED ERROR DATA

Fig.9 Cylinder Speed Control

CYLINDER MOTOR SPEED	SLOWER ROTATION	PROPER SPEED	FASTER ROTATION
THE PWM CIRCUIT OUTPUT	The hight Period becomes shorter.	50%duty	The hight Period becomes longer.
DC VOLTAGE	The voltage decreases.	Center Voltage (approx. 2. 5V)	The Voltage increases.

Fig.10 Cylinder Speed Control Output

2. Cylinder Phase Comparator

To lock the phase of the motor to the incoming vertical sync signal during the record mode, a phase control is necessary.
To achieve phase control, the cylinder utilizes a PG signal produced by magnets of the flywheel and PG Head.
The head switching signals is produced from the cylinder PG and FG signal, therefore the head switching pulse changes in accordance with the cylinder motor phase.

The head switching pulse is applied to the cylinder phase comparator as the variable signal.
The reference signal of the cylinder phase comparator is the vertical sync signal of the incoming video signal in the record mode.

This relationship between the cylinder motor and the incoming video signal is controlled by the cylinder phase comparator. The phase relationship is converted to variable pulse widths by the digital phase comparator and the PWM circuit, then applied to the Low Pass Filter. Filtering the PWM output will yield a DC voltage, which in turn is used to control the phase of cylinder motor.

If the cylinder motor is kept at the correct phase, a 50% duty square wave will be produced and applied to the Low Pass Filter. The motor can be kept at the proper speed. If the cylinder motor speed varies, the PWM output pulse width will change accordingly (See Fig.11).
In the case of the playback mode, the counted down clock signal is used as the reference signal.

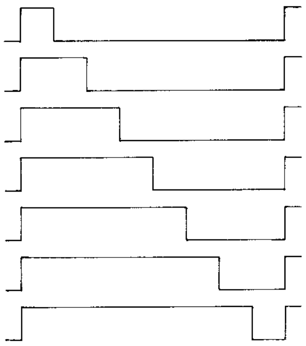
CYLINDER MOTOR PHASE	LATCH NUMBER OF THE CYLINDER PHASE COMPARATOR	P. W. M OUTPUT WAVEFROM	OUTPUT OF L. P. F
DELAYED PHASE ↑	INCREASE ↑		LOWER VOLTAGE ↑
CORRECT PHASE	SPECIFIC NUMBER		D. C. 2. 5V
↓ ADVANCED PHASE	↓ DECREASE		↓ HIGHER VOLTAGE

Fig.11 Cylinder Phase Error

2-3-2. CAPSTAN SERVO

The simplified block diagram is shown in Fig.12 .

The construction of circuit is same as NV-M1, although a newly developed IC is used.

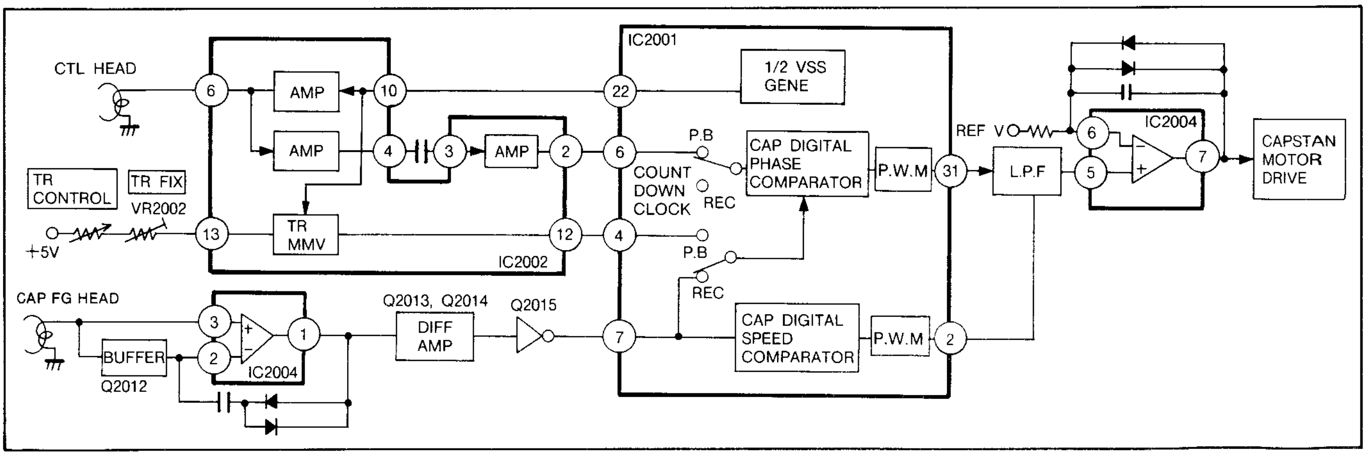

CTL HEAD
6
AMP
10
22
IC2001
1/2 VSS GENE
AMP
4
3
AMP
2
6
P.B
CAP DIGITAL PHASE COMPARATOR
COUNT DOWN CLOCK
REC
P.W.M
31
REF V
L.P.F
6
5
IC2004
7
CAPSTAN MOTOR DRIVE
TR CONTROL
TR FIX
VR2002
+5V
13
TR MMV
12
4
IC2002
P.B
REC
CAP FG HEAD
3
2
1
BUFFER
Q2012
IC2004
Q2013, Q2014
DIFF AMP
Q2015
7
CAP DIGITAL SPEED COMPARATOR
P.W.M
2

Fig.12 Capstan Servo

1. Capstan speed Comparator

The speed control of the capstan is similar to the cylinder speed control, and the same method is used to make a trapezoidal wave, as the FG output being a sine-wave(1135Hz).
Further operations are similar to the cylinder servo.

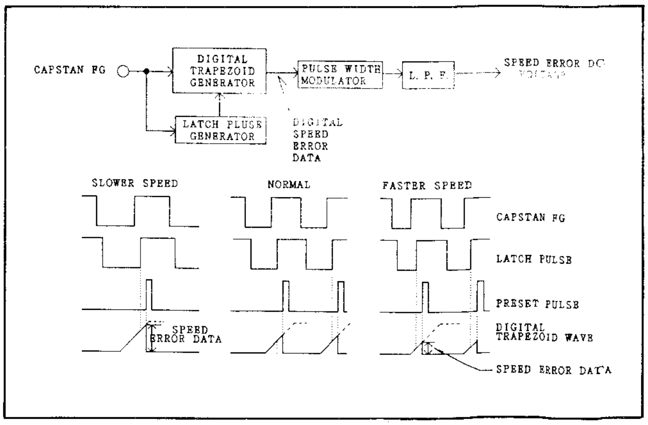

CAPSTAN FG
DIGITAL TRAPEZOID GENERATOR
PULSE WIDTH MODULATOR
L. P. F
SPEED ERROR DC VOLTAGE
LATCH PLUSE GENERATOR
DIGITAL SPEED ERROR DATA
SLOWER SPEED
NORMAL
FASTER SPEED
CAPSTAN FG
LATCH PULSE
PRESET PULSE
DIGITAL TRAPEZOID WAVE
SPEED ERROR DATA
SPEED ERROR DATA

Fig.13 Capstan Speed Control

(a). Capstan Phase comparator--Record Mode

In the record mode, the capstan motor should spin at a steady speed.
So that the counted down FG signal (PG signal:25Hz) is synchronized with the reference signal.
first, the counted down clock signal (25Hz) is used to produce the reference signal. At the same time, the capstan FG which is applied to pin 7 of IC2001 (1135Hz) and is counted down to 25Hz. (This counted down FG signal is called the capstan PG signal). Next, the digital monostable multivibrotor is triggered by the capstan PG signal, and produces a rectangular wave.
This rectangular wave is used to sample the reference. 10-bit phase-error-data is produced and applied to the PWM circuit. Further operation is the same as the cylinder phase control.

(b). Capstan Phase Comparator--Playback mode

In the playback mode, the capstan motor should be controlled so that the video heads trace the proper tracks.

(FUNDAMENTAL SIGNAL AND TRACKING CONTROLS)
In order to keep the proper relationship between the cylinder and capstan servos, the reference signal is produced from the cylinder phase control signal.

(CAPSTAN PHASE COMPARATOR)
The capstan phase comparator sychronizes, the phase between the reference and control signal Further, 10-bit phase-error data is produced and applied to the PWM circuit.

(Pulse Width Modulation)
The circuit operation is quite similar to the cylinder phase comparator.

(Head Switching Signal Generator)
To achieve the 4 head herical switching, Head Switching Signal Generator IC2007 is provided. This IC is also same as used VKR6800.

2-4. VIDEO CIRCUIT

Video circuit (Luminance and Chrominance) are same as VKR6800 (refer to training Manual for VKR6800).

2-5. CAMERA CIRCUIT

In addition to VKR6800 camera circuit, Automatic Focusing system (AF) and Automatic White Tracking (AWT) circuits are employed in this model. So only those circuits different from VKR6800 are described below.

2-5-1. AUTOMATIC WHITE TRACKING (AWT)

In addition to the conventional Automatic White Balancing control (AWC) circuit, Automatic White Tracking (AWT) circuit is employed in this model. AWT circuit is a white balance circuit with a sensor for constant adjustment of the white balance.

In case of Automatic White Balance control, place the white cap over the lens, or aim the camera at a white object. Set the White Balance Selector to "AUTO" position, and press the "SET" button. In this case, IC901 detects the incoming level of red and blue signals (from the pick-up tube via IC902) and adjusts the Gain Control circuit so that the picture becomes white.

These red and blue gain levels are memorized and kept constant until the "SET" is pressed again.

Therefore, even if the colour temperature is changed, the red and blue gain levels (of the white balance) remain fixed until the next white balance adjustment is performed .

Namely, this form of Automatic White Balanc control is effective if the colour temperature remains the same. But if the camera is in variable colour temperature conditions, the Automatic White Tracking becomes effective.

In case of Automatic White Tracking, set the White Balance Selector to "FULL AUTO" position. Henceforth, the sensor of the AWT circuit detects the red and blue components of the incoming light (the light is presumed

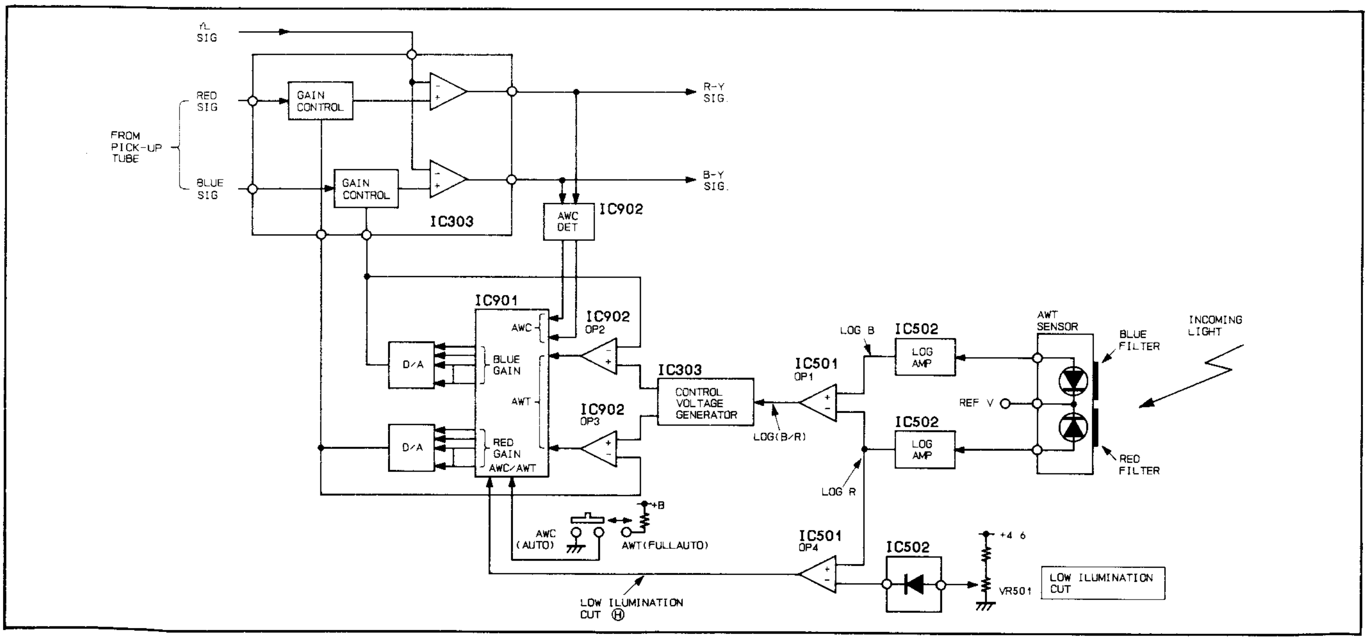

YL SIG
RED SIG
FROM PICK-UP TUBE
BLUE SIG
GAIN CONTROL
GAIN CONTROL
IC303
R-Y SIG.
B-Y SIG.
AWC DET
IC902
IC901
AWC
BLUE GAIN
AWT
RED GAIN
AWC/AWT
D/A
D/A
IC902 OP2
IC902 OP3
IC303
CONTROL VOLTAGE GENERATOR
LOG(B/R)
+B
AWC (AUTO)
AWT(FULLAUTO)
LOW ILUMINATION CUT Ⓗ
LOG B
IC502
LOG AMP
IC501 OP1
IC502
LOG AMP
LOG R
REF V
AWT SENSOR
BLUE FILTER
RED FILTER
INCOMING LIGHT
IC501 OP4
IC502
+4 6
VR501
LOW ILUMINATION CUT

Fig.14

to be a white beam) inducing IC901 to adjust the red and blue gain levels accordingly.

Note that IC901 is a common chip for both Automatic White Tracking and Balance control systems.

When White Balance Selector is set to "FULL AUTO", the signal of the Automatic White Tracking circuit is utilized. But, when the Selector is set on "AUTO" position, the R-Y and B-Y signals (from the pick-up tube) are used. (See Fig.14)

The AWT circuit converts the colour temperature of the incoming light beam into DC potential and adjusts the red and blue gain levels accordingly. (Refer to the block diagram in Fig. 14.)

The sensor of the AWT circuit detects the blue and red components of the incoming light beam. The blue components are filtered (by blue filter) and converted into DC potential by using photo-diode. The red components are treated likewise.

Both DC signals (of blue and red components) are sent to LOG AMP circuit for amplification on a logarithmic scale. This is to improve the dynamic range of signal from sensor. The amplified blue and red signals are subtracted at an operational amplifier, where the output becomes Log(B/R).

This ratio signal is then fed to a Control Voltage Generator IC901 via OP2 and OP3. The latter components detect the incoming signal levels and supply the resulting information to IC901 so that output at IC901 is the same as the input at OP2 and OP3.

IC901 is a White Balance integrated circuit. It generates a digital gain control signal in accordance with the red and blue input signals from OP2 and OP3. In short, IC901 is a buffer IC, e.g. when the camera is panned quickly (the colour temperature changes accordingly), the red and blue gains change quickly too, and the colour picture on the TV monitor becomes unstable.

In order to prevent this, IC901 is used. It changes the red and blue gain levels gradually as it displays hysteresis characteristics. It supplies a digital gain control signal to the D/A converter for due conversion into DC signals. These signals are then sent to the gain control block for adjusting the white balance in accordance with the colour temperature.

If the incoming light is insufficient, the sensor at AWT circuit will fail in detecting the colour temperature. In such a case, OP4 will detect the "low-light" conditions and supply accordingly "Low Illumination high " signal to IC901, so that the gain maintains the same red and blue gain levels achieved previously.

2-5-2. AUTO FOCUS CIRCUIT

1. Basic Principles

The Auto Focusing System (AFS) adopted in this model is based on the triangulation method for measuring the distance between the object and the camera by projecting an infra-red beam and receiving it after being reflected by the object. Position Sensitive Device (PSD) is used as an infra-red receiver.

When an infra-red ray hits the PSD, it would generate a current which varies inversely with the distance between the infra-red hitting portion (IHP) and the output pole.

Output 1 and 2 are:

$$I1=I0\ (l/2 + x)/l \ \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$I2=I0\ (l/2 - x)/l \ \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where:
I0 = Photo current
x = Distance between IHP and the centre of PSD, and
l = Distance between the output 1 Pole and output 2 Pole.

From (1) and (2):

$$(I1-I2)/(I1+I2)=2x/l \ \ldots\ldots\ldots\ldots\ldots (3)$$

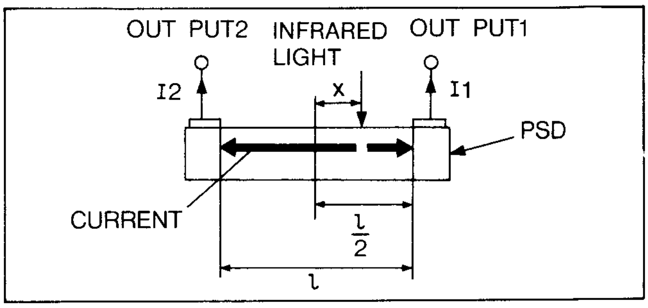


Fig. 15

Structural construction of the AFS is shown in Fig. 16.

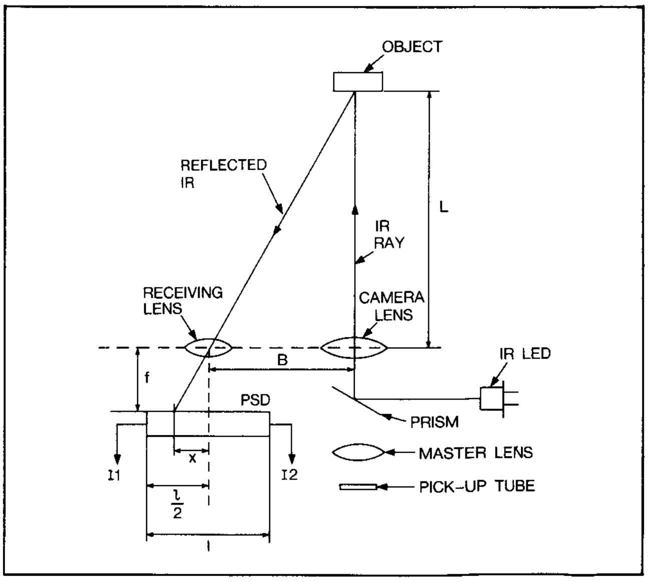


Fig.16

Infra-red ray from IR LED is reflected by the prsim and projected on the object through the lens of the camera. The reflected ray (from the object) hits the PSD through the receiving lens.

The x:f ratio is equal to B:L ratio.

$$L/B = f/x \qquad x = f.B/L \ \text{----}(4)$$

From (3) and (4):

$$\underline{\underline{(I1-I2)/(I1+I2)=2fB/L \times 1/l}}$$

In other words, (I1+I2)/(I1-I2) is proportional to L (distance between camera and object).

Therefore, in getting this ratio, the distance between the object and the camera can be measured.

This calculation is carried out by IC7.

2. AUTO FOCUS CIRCUIT

Simplified block diagram is shown in Fig. 17.

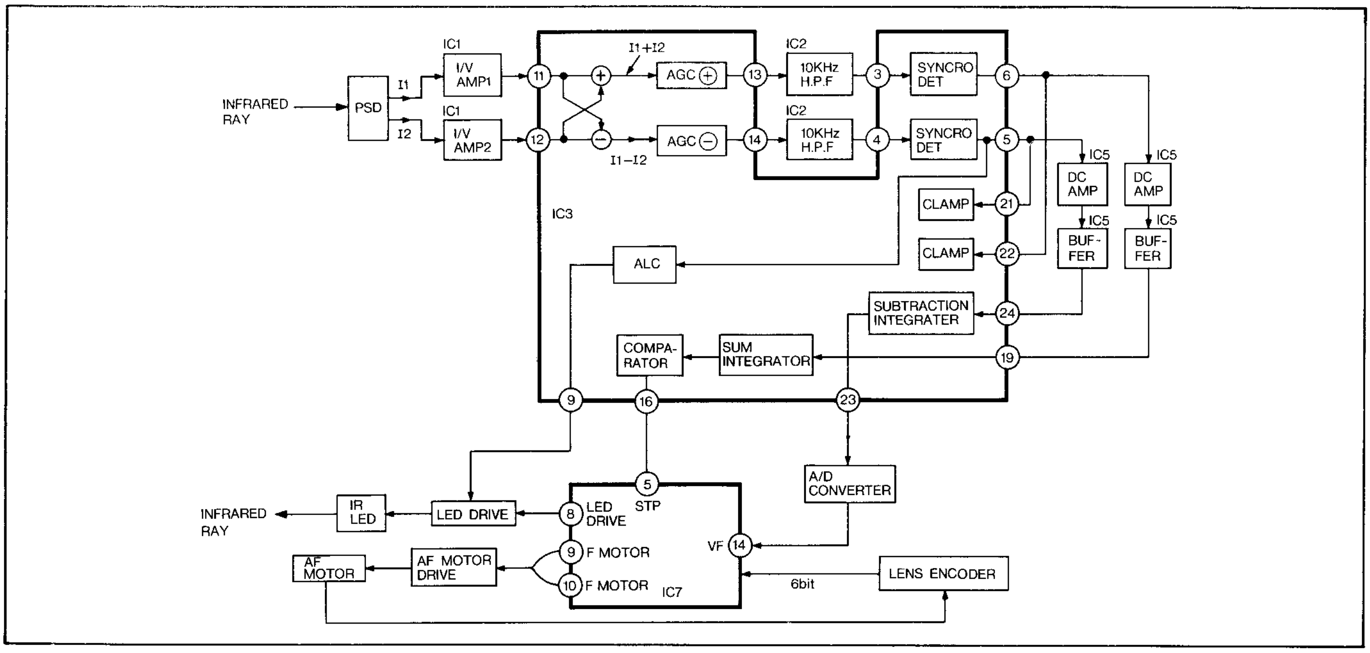

IC1
I/V AMP1
INFRARED RAY
PSD
I1
I2
IC1
I/V AMP2
11
12
I1+I2
I1−I2
AGC⊕
AGC⊖
13
14
IC2
10KHz H.P.F
IC2
10KHz H.P.F
3
4
SYNCRO DET
SYNCRO DET
6
5
IC5
DC AMP
IC5
DC AMP
IC5
BUF-FER
IC5
BUF-FER
CLAMP
21
CLAMP
22
IC3
ALC
SUBTRACTION INTEGRATER
24
COMPA-RATOR
SUM INTEGRATOR
19
9
16
23
A/D CONVERTER
5
STP
INFRARED RAY
IR LED
LED DRIVE
8
LED DRIVE
AF MOTOR
AF MOTOR DRIVE
9
F MOTOR
10
F MOTOR
IC7
VF
14
6bit
LENS ENCODER

Fig.17

Infra-red beam is projected on the object after being modulated at 10KHz. The reflected beam from the object hits the PSD. Signals I1 and I2 from the PSD are then amplified. IC3 carries out summation and subtraction to calculate (I1+I2) and (I1-I2). Low level noises are cut out by HPF, then (I1+I2) and (I1-I2) signals are detected by a synchronized detector and then integrated by sum and subtruction integrator.

In the integrator when Integrated (I1+I2) reaches certain level, the level of integrated (I1-I2) signal which is fed into microprocessor IC7 through A/D converter is read in IC7, and the distance (L) is calculated.

Focusing lens position (FLP) is also detected (by Lens Encoder), and the digital information (from Lens Encorder) is fed into IC7 too.

Lens Encoder will be explained later.

IC7, then, compares the FLP with measured distance (L) and generates a controlling signal to the focusing motor to adjust the lens accordingly.

(1) IR LED Drive

This circuit is assigned for projecting the modulated (at 10KHz) infra-red beam on the object. Simplified block diagram is shown in Fig. 18.

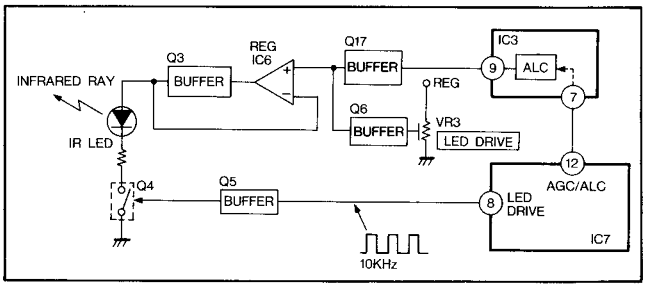

INFRARED RAY
Q3
BUFFER
REG
IC6
Q17
BUFFER
IC3
9
ALC
7
REG
Q6
BUFFER
VR3
LED DRIVE
IR LED
12
Q4
Q5
BUFFER
AGC/ALC
8
LED DRIVE
IC7
10KHz

Fig. 18

Potential is always applied at the anode side of IR LED. The value of this, is determined by ALC. If the distance (L) is less than 3m, high signal is sent to Pin 7 of IC3, and ALC will adjust the intensity of the infra-red beam generated by IR LED in accordance with the distance. However, if the distance (L) is more than 3m, ALC output is fixed to maximum and the AGC circuit is activated.

Now, as the 10KHz pulse is applied to the cathode side of IR LED, the latter would generate 10KHz infra-red beam through the camera lens (refer to Fig.16).

(2) I/V Amplifier

The output current from PSD is converted to a DC signal by an operational amplifier IC1.

(3) AGC/ALC

There are two modes in this AF circuit.

(a) AGC Mode: Intensity of the infra-red beam is maximized and gain of the AGC is regulated in accordance with the incoming signal.

(b) ALC Mode: The gain of AGC is fixed and the intensity of the infra-red beam from IR LED is adjusted.

Mode switchig conditions are:
ALC .... Less than 3m.
AGC .... More than 3m.

(4) 10KHz H.P.F (High Pass Filter)

In order to improve S/N ratio, components of less than 10KHz are cut out by this filter. It consists of IC2, capacitors and resistors.

(5) Synchronous Detector

This detector detects the signal from IR LED using a reference signal synchronized with the infra-red beam frequency (10KHz).

AGC and ALC are controlled by the detected summation (I1+I2).

(6) Subtraction Integrator/Summation Integrator

In order to detect the (I1-I2) and (I1+I2) ratio signals, Subtraction Integrator and Summation Integrator together with IC7, RA1 and IC8 (refer to Fig. 19) are used.

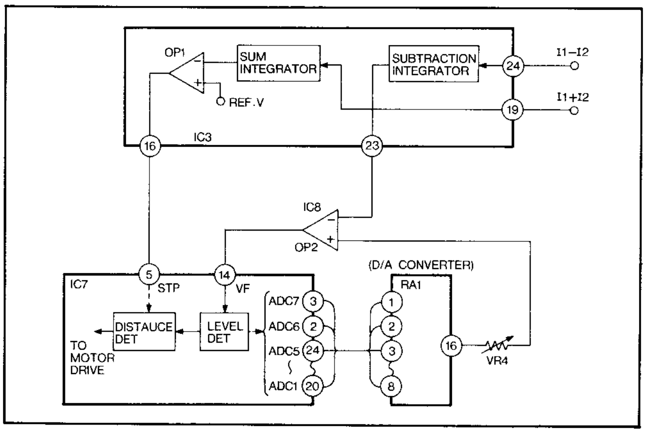

OP1
SUM INTEGRATOR
SUBTRACTION INTEGRATOR
I1−I2
24
I1+I2
19
REF.V
IC3
16
23
IC8
OP2
(D/A CONVERTER)
RA1
5
STP
14
VF
IC7
DISTAUCE DET
LEVEL DET
TO MOTOR DRIVE
ADC7
3
ADC6
2
ADC5
24
ADC1
20
1
2
3
8
16
VR4

Fig. 19

(I1-I2) signal is fed to comparator (IC8) by the Subtraction Integrator. Level Detector at IC7 supplies pulses (8bit)to D/A converter (RA1) in accordance with the output of IC8. These pulses are then converted to DC voltage and supplied to the comparator (IC8).

In accordance with the results of comparison, the Level Detector regulates the pulses supplied to D/A converter (RA1).

In such a manner, the Level Detector detects the output of the subtraction Integrator (I1-I2).

(I1+I2) signal is also supplied to the comparator (operational amplifier op1 after being integrated by the Summation Integrator.

When the integrated signals reach certain voltage level, operational amplifier 1 generates pulse to be supplied to the Distance Detector as a Stop signal. This time, however, the Distance Detector reads the Subtraction Integrator's output and calculates (I1-I2) and (I1+I2) ratios. The distance (L) is thus measured, and the information is sent to the Motor Drive circuit.

(7) Lens Encoder

Location of the Lens Encoder is shown in Fig. 20. The Lens Encoder (LE) detects the FLP (Focus Lens position) so that the focus is adjusted correctly. It consists of a moving contact, 6 fixed terminals and a GND terminal (refer to Fig. 21). The moving contact (MC) is interlocked with the focusing ring. As the latter moves, the moving contact moves too.

One side of the MC is at connected to the GND terminal. When any of the 6 terminal contacts the MC, it would be grounded and the output signal become 6 bit signals.

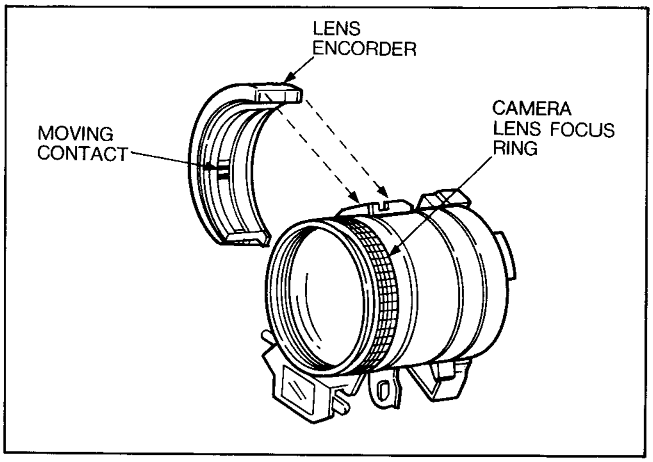

LENS ENCORDER
MOVING CONTACT
CAMERA LENS FOCUS RING

Fig. 20

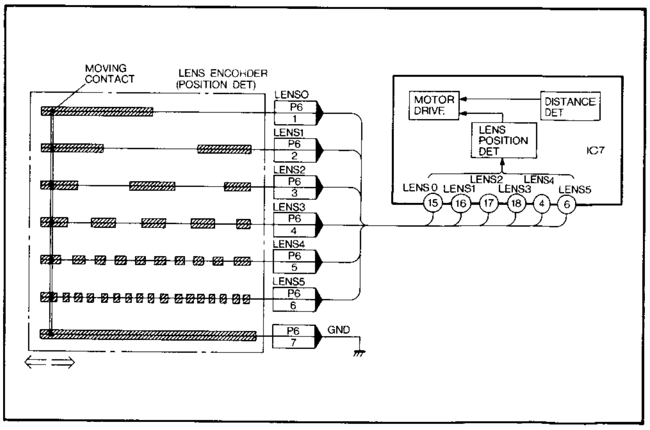

MOVING CONTACT
LENS ENCORDER (POSITION DET)
LENS0
P6
1
LENS1
P6
2
LENS2
P6
3
LENS3
P6
4
LENS4
P6
5
LENS5
P6
6
P6
7
GND
MOTOR DRIVE
DISTANCE DET
LENS POSITION DET
IC7
LENS 0
LENS1
LENS2
LENS3
LENS4
LENS5
15
16
17
18
4
6

Fig. 21

6-bit position data from the fixed terminals are generated and sent to IC7 to determine FLP (Focus Lens Position) by means of Lens Position Detector.

The motor drive circuit compares the data of FLP with that of the distance (L) coming from the Distance Detector. Accordingly, it generates motor drive signal to adjust the lens for the best possible position.

3. ABBREVIATIONS OF TERMS

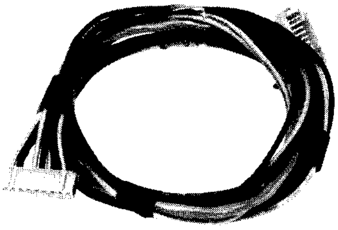
ACC	Automatic Colour Control
ADJ	Adjustment
ADM	Adress Memory
AF	Automatic Focusing system
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
APC	Automatic Phase Control
AWC	Automatic White Balance Control
AWT	Automatic White Tracking
BLK	Blanking
BPF	Band Pass Filter
BSC	Blue Sub Carrier
B/W	Black and White
CBA	Circuit Board Assembly
CP1	Clamping Pulse 1
CP2	Clamping Pulse 2
CRT	Cathode Ray Tube
DET	Detector
DIFF AMP	Differential Amplifier
DL	Delay Line
DOC	Drop Out Compensator
EE	Electronics to Electronics
EVF	Electronic View Finder
FBT	Fly Back Transformer
FG	Frequency Generator
FH	15.625KHz Horizontal Drive Pulse Frequency
FL	Filter
FM Signal	Frequency Modulated Signal
GEN	Generator
H	Horizontal
HSS	Horizontal Synchronizing Pulse
LDI	Latch Data Information
LIN	Linearity
LPF	Low Pass Filter
MMV	Monostable Multi-Vibrator
MODU	Modulation
OB	Optical Black
OSC	Oscillator
PC	Phase Comparator
PED	Pedestal
PG	Pulse Generator
PSD	Position Sensitive Device
RF	Radio Frequencies
RSC	Red Sub Carrier
SC	Sub Carrier
SC1	0 degree Phase Sub Carrier
SC2	90 degree Phase Sub Carrier
SEPA	Separation, Separator
SS	Slow and Still
TP	Test Point
V	Vertical
VCO	Voltage Controlled Oscillator
VP	Vertical Pulse
VV	Video to Video
VXO	Voltage Controlled Crystal Oscillator
WBLK	Wide Blanking Pulse
XTAL	Crystal
YH	Luminance Signal
YL	Low Band Luminance Signal

Technical Information

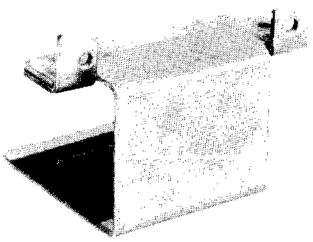
Subject: How to use Servicing Jigs (VFK0302, 0303, 0312, 0304)

We are pleased to inform you to introduce the new "VHS MOVIE" model: VKR6810 in the market.
And these servicing Jigs would give you a better and quick servicing, so place an order for these Jigs.

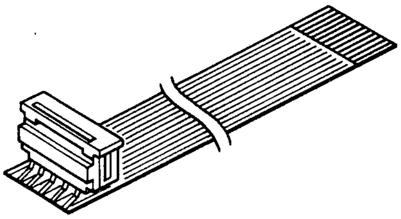
VFK0302: 9-Pin Connection Cable



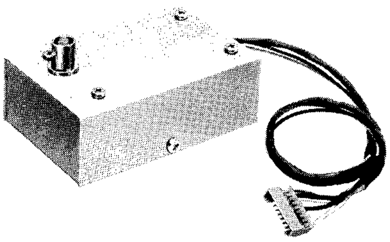
VFK0303: Camera Holer



VFK0312: 10-Pin Connection Cable



VFK0304: Y/C Separator



1. How to use of VFK0302; 9-Pin Connection Cable, VFK0303; Camera Holder and VFK0312; 10-Pin Connection Cable.

In case of camera servicing, especially adjustment or checking for the any foil on circuit board assembly, camera unit has to be removed from video recorder unit.
In this stage, as a camera unit can not be connected to a video recorder unit, it is not able to operate independently. That is why the 9-pin connection cable is necessary.
Besides above, the camera unit is required to fix on the tripod to shoot something like Logarithmic gray scale chart or Color chip chart.
For this purpose, camera holder must be used.
In case of VTR Main circuit board servicing, especially checking for any foil side on circuit board, VTR Main circuit board has to be opened.
In this stage, it is not possible because 1 flexible connector (P1501) is too short.
In order to prevent this, 10 pin connector cable must be used and operation board must be removed from chassis as shown below.

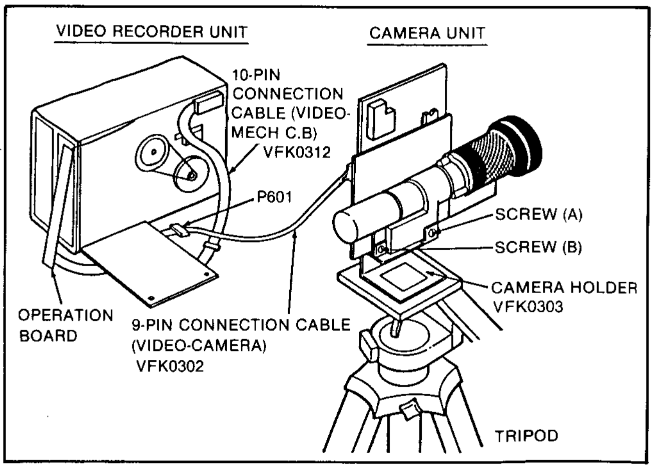


Fig. 1. How to use of VFK0302, 0303, 0312

(1) Remove the Camera unit. (Refer to the Disassembly Method, Removal of Camera unit).
(2) Remove screw (A) and screw (B), and install the camera unit on Camera Holder and fix tightening 2 screws (A) and (B).
(3) Fix this unit to Tripod.
(4) Connect the 9-pin connection cable at P601 (between VTR and Camera).
(5) Open the VTR Main circuit board assembly (refer to Disassembly Method, Removal of Main C.B.A)

(6) Remove the operation board.
(7) Connect the 10-pin connection cable at P1501 (between VTR and Mechanism connection C.B)
(8) Supply the power and push operation ON/OFF switch.

2. How to use of VFK0304; Y/C Separator

Generally, the adjustment for VTR section should be performed by the signal which is coming from camera unit, so all checking and servicing are available by using the 9-pin connection cable (VFK0302), camera Holder (VFK0303) and 10-pin connection cable (VFK0312).
If you want to check the only VTR section besides camera section by using the Line input signal, Input Adaptor (22AV5120) has to be used as shown below.
Because this VHS MOVIE can not accept ordinary composite signal, so this signal should be separated into two signals (Luminance and chrominance signal).
For above purpose, Input Adaptor is used, however, Y/C separator (VFK0304) is also provided for same purpose.

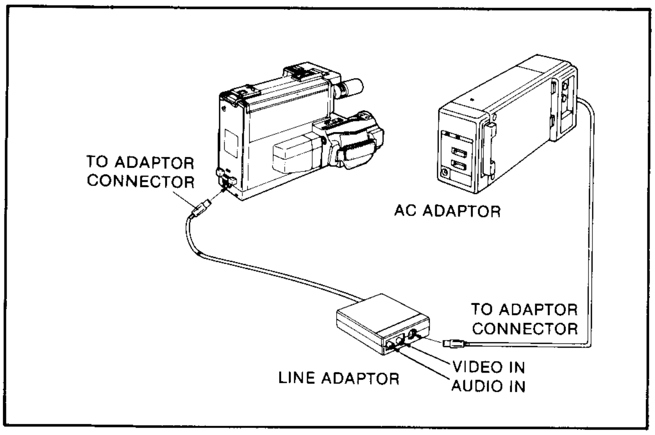


Fig. 2. Connection of Line Adaptor

By using this Y/C separator, easy checking is available whether the camera is OK or recording process is OK or also recording from composite line input.

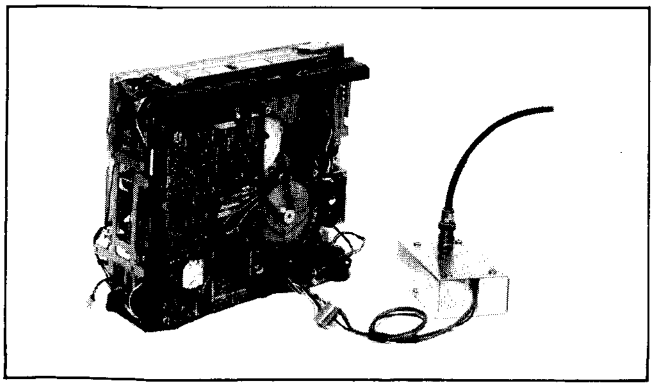


Fig. 3. How to use of VFK0304

(1) Remove the camera unit. (Refer to the Disassembly Method, Removal of camera unit)
(2) Connect the Y/C separator to P601 (VTR side) as shown in Fig. 3.

3. How to Eject Manually

If the electrical circuit is defective the cassette compartment might not eject, or you want to eject the cassette compartment without the electrical power, please push the Eject lever (B) unit after disconnecting the power source.

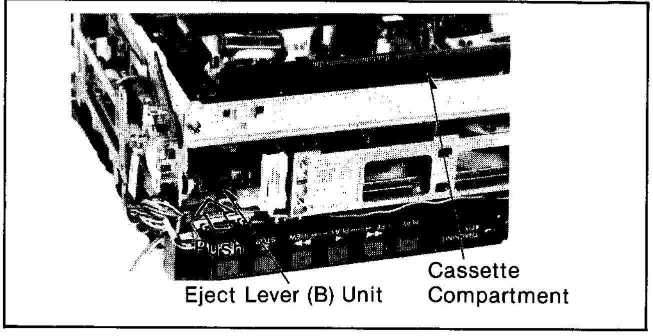


Fig. 4. How to Eject Manually

Note:

(1) This VKR6810 is designed to record only the signal coming from camera, but if Input Adaptor is used, recording from composit line input including dubbing by this model is available.

SECTION 2
ADJUSTMENT PROCEDURES

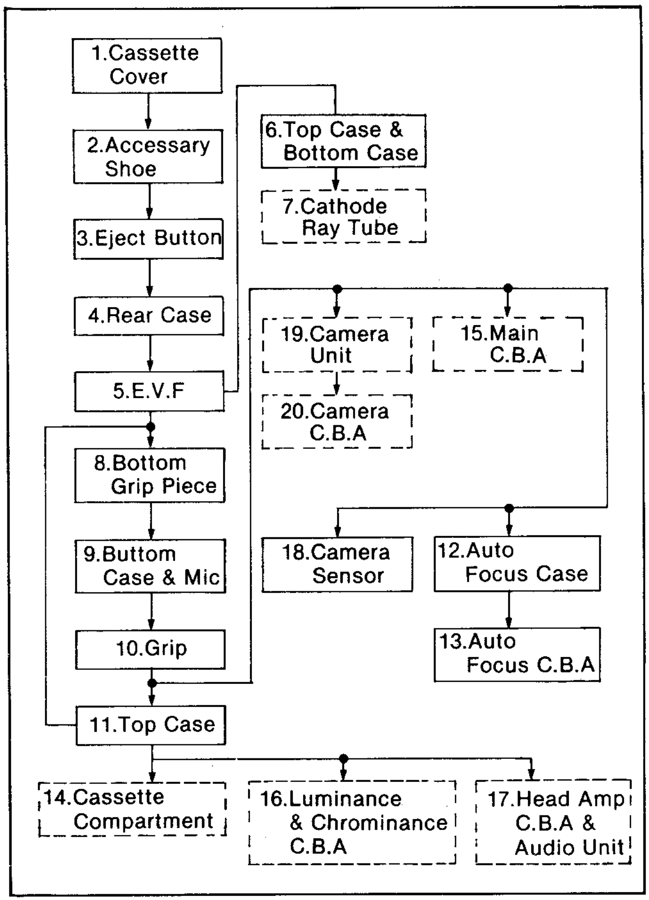
Caution: Servise Work or for any part must be performed in dust free location to keep the unit dust free.

2-1. DISASSEMBLY METHOD

2-1-1. DISASSEMBLY FLOWCHART

This flowchart indicates disassembly steps of the cabinet parts and the C.Boards in order to find the items necessary for servicing. When reassembling, perform the steps in the reverse order.

Note:
a. When removing the cabinet, work with care so as not to break the locking portions.



1.Cassette Cover
2.Accessary Shoe
3.Eject Button
4.Rear Case
5.E.V.F
6.Top Case & Bottom Case
7.Cathode Ray Tube
8.Bottom Grip Piece
9.Buttom Case & Mic
10.Grip
11.Top Case
12.Auto Focus Case
13.Auto Focus C.B.A
14.Cassette Compartment
15.Main C.B.A
16.Luminance & Chrominance C.B.A
17.Head Amp C.B.A & Audio Unit
18.Camera Sensor
19.Camera Unit
20.Camera C.B.A

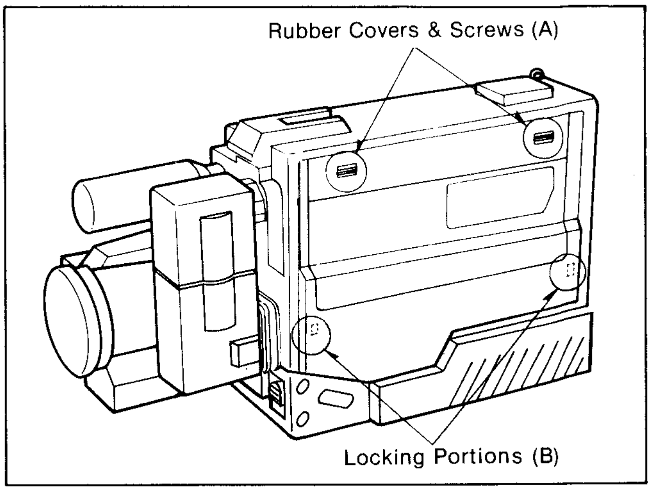
Fig. D1

2-1-2. DISASSEMBLY METHOD

Notes:
a. Place the cloth or any other soft materials under the C.B.A or unit for preventing them being damaged while servicing.
b. When reinstalling, ensure the connectors are connected and any electrical components are not damaged.
c. Do not supply power to the unit during working.

1.Removal of the Cassette Cover

(1) Remove 2 rubber covers and 2 screws (A). Then carefully lift and pivot the front portion to remove.
Pay attention so as not to damage the locking portions (B).

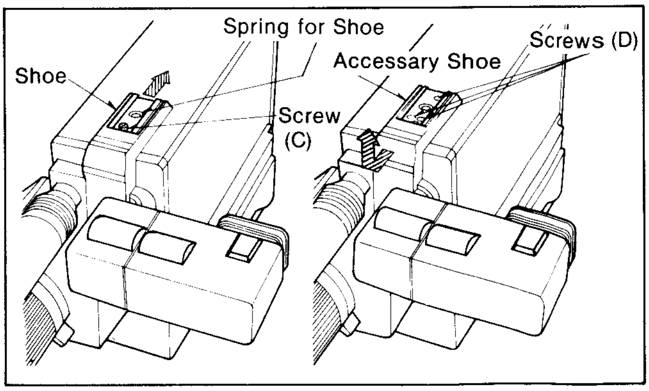


Rubber Covers & Screws (A)
Locking Portions (B)

Fig. D2

2.Removal of the Accessary shoe

(1) Remove 1 screw (C) and spring for shoe.
(2) Remove 3 screw (D) and shoe.

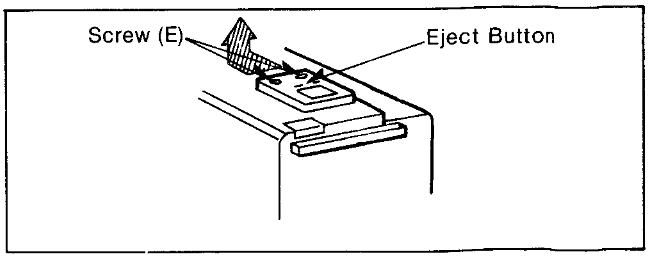


Shoe
Spring for Shoe
Screw (C)
Accessary Shoe
Screws (D)

Fig. D3

3.Removal of the EJECT Button

(1) Remove 2 screws (E).



Screw (E)
Eject Button

Fig. D4

4.Removal of the Rear Case

(1) Remove 4 screws (F) and pull the (G) portion of the Rear case, and push the (H) portion as arrow marks.

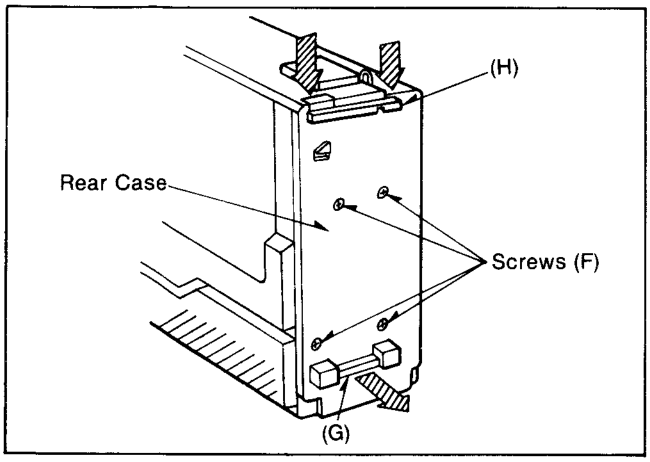

(H)
Rear Case
Screws (F)
(G)

Fig. D5

(2) Remove screw (I) then remove the Battery Catcher.

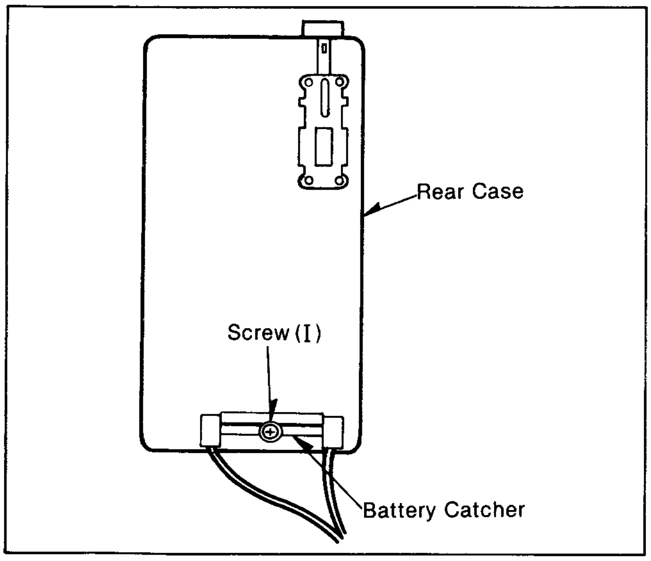

Rear Case
Screw (I)
Battery Catcher

Fig. D6

5.Removal of the EVF

(1) Remove 1 screw (J) and slide up the E.V.F as arrow mark and disconnect the connector of the EVF.

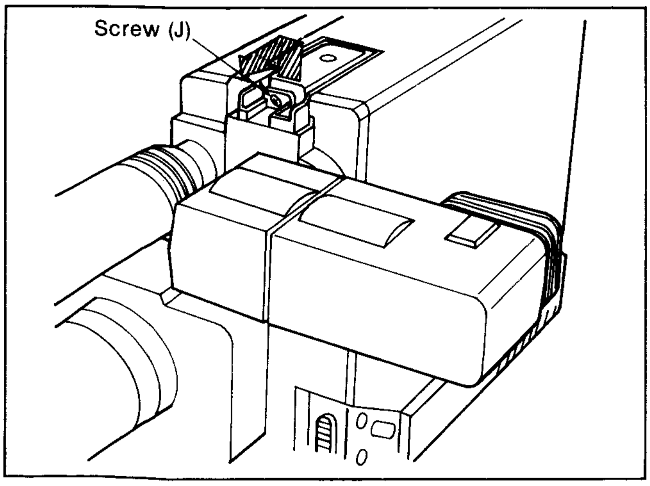


Fig. D7

6.Removal of the Top case and Bottom case of the EVF

(1) Remove a ring (K) and Front Panel unit.

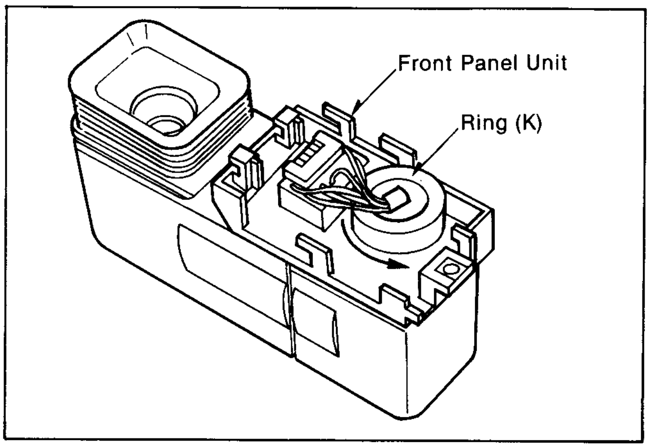

Front Panel Unit
Ring (K)

Fig. D8

(2) Remove ring (L) and 2 screws (M).
(3) Remove the Bottom Holder and Top Holder.

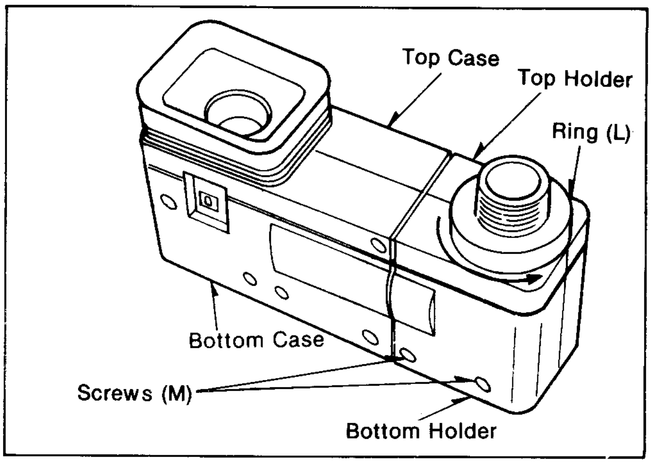

Top Case
Top Holder
Ring (L)
Bottom Case
Screws (M)
Bottom Holder

Fig. D9

(4) Remove the 5 screws (N) and remove the Top case and Bottom case.

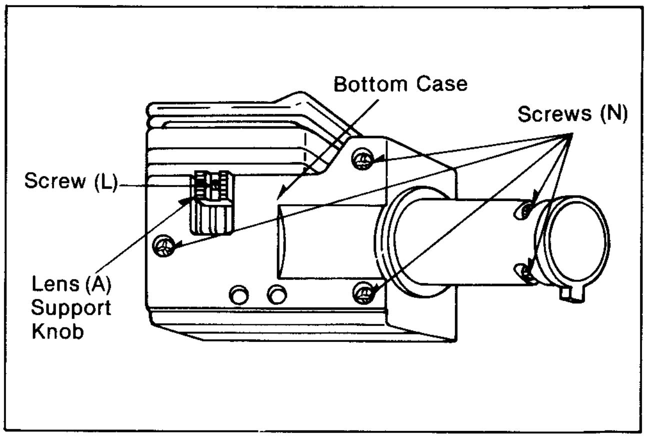

Bottom Case
Screws (N)
Screw (L)
Lens (A) Support Knob

Fig.D10

(5) Remove the screw (L) and the Lens (A) Support knob.

7.Removal of the cathode ray tube

(1) Disconnect the CRT socket and remove the rubber (CRT fixing).
(2) Loose screw (O) and remove the CRT.

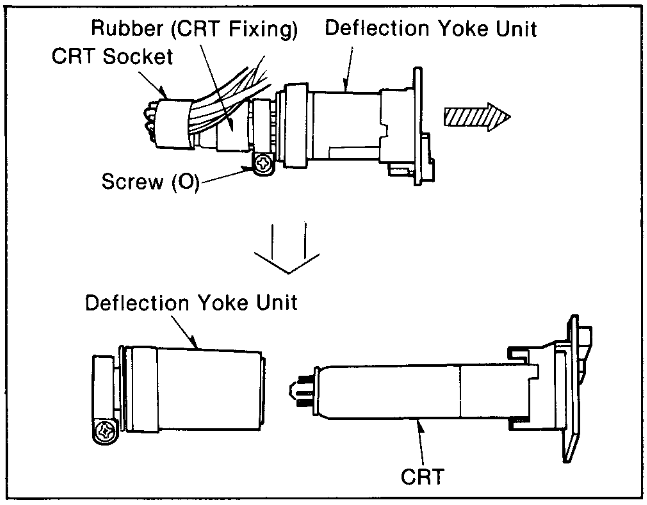

Rubber (CRT Fixing)
Deflection Yoke Unit
CRT Socket
Screw (O)
Deflection Yoke Unit
CRT

Fig. D11

Note:
a When reinstalling or replacing of a CRT, connect EVF connector and turn on the power SW before casing (pay attention not to touch to any parts.)
Then adjust the deflection yoke so that the monitor of the CRT becomes holizontal position and fix it by adhesive tape.

8.Removal of the Bottom Grip piece

(1) Remove 2 screws (P) and remove the Bottom Grip piece.

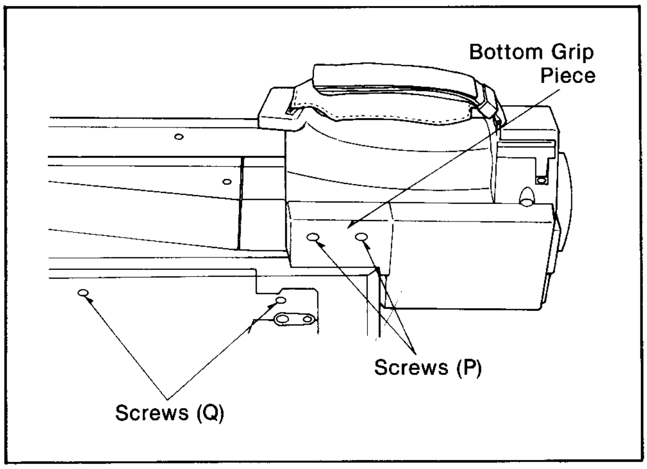

Bottom Grip Piece
Screws (P)
Screws (Q)

Fig. D12

9.Removal of the Bottom Case and Mic

(1) Remove 2 screws (Q). Refer to Fig.D12.
(2) Remove 7 screws (R) and remove the Bottom case with Mic unit.
(3) Disconnect the Mic connector.

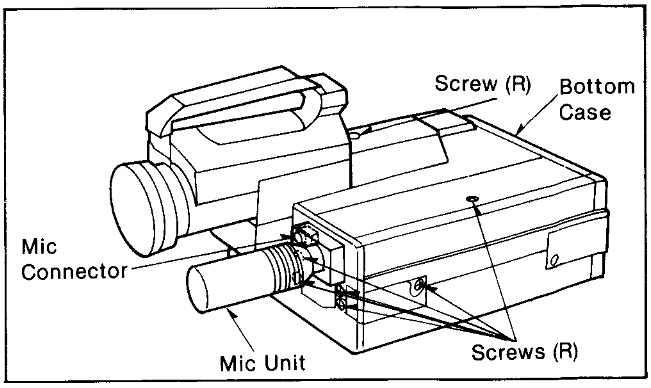

Screw (R)
Bottom Case
Mic Connector
Mic Unit
Screws (R)

Fig. D13

(4) Remove the Mic unit from the Bottom case.

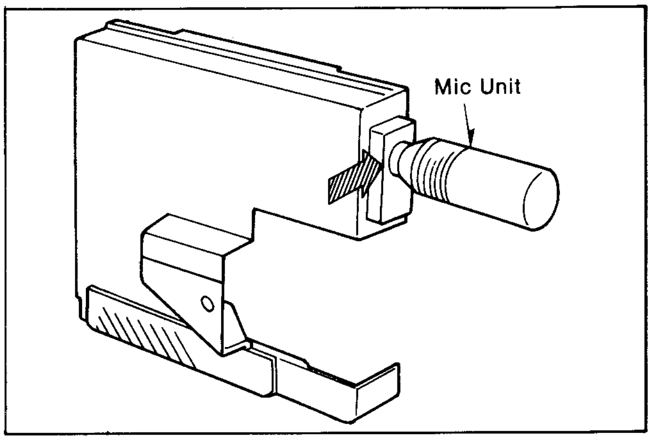


Fig. D14

(5) Remove 2 screws (S) of the Mic unit then remove the Mic holding angle.

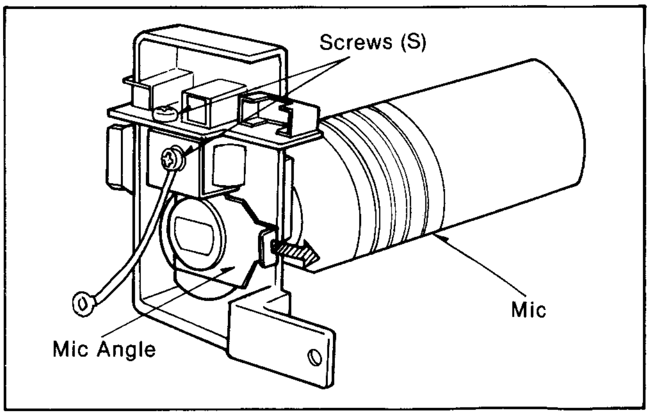

Screws (S)
Mic
Mic Angle

Fig.D15

10.Removal of the Grip

(1) Remove 3 screws (T) and disconnect P801, P802, P803.

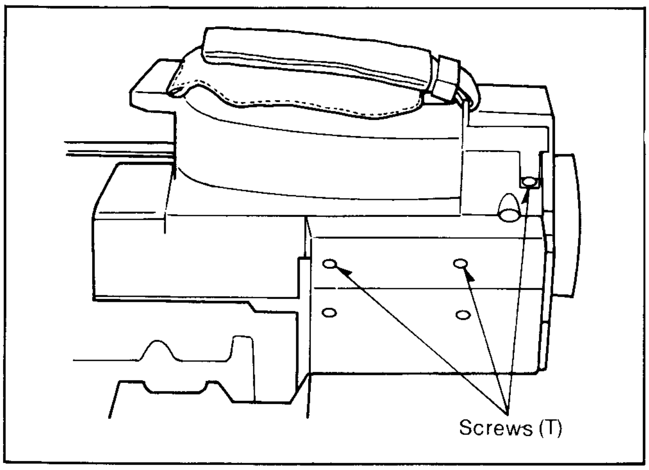


Fig. D16

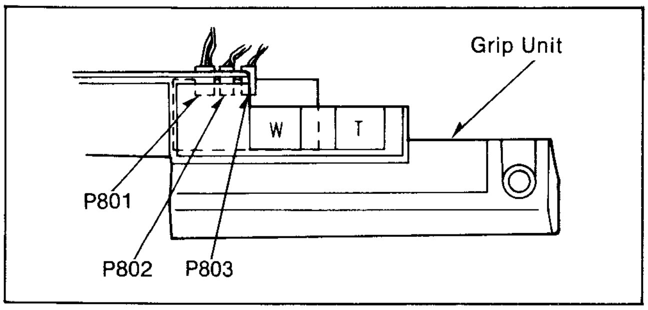

Grip Unit
W
T
P801
P802
P803

Fig. D17

11.Removal of the Top Case

(1) Remove 3 screws (U) on the top case. Then remove the top case.
(2) Disconnect P7 and remove the 2 screws (I) and remove the Operation C.B.A.

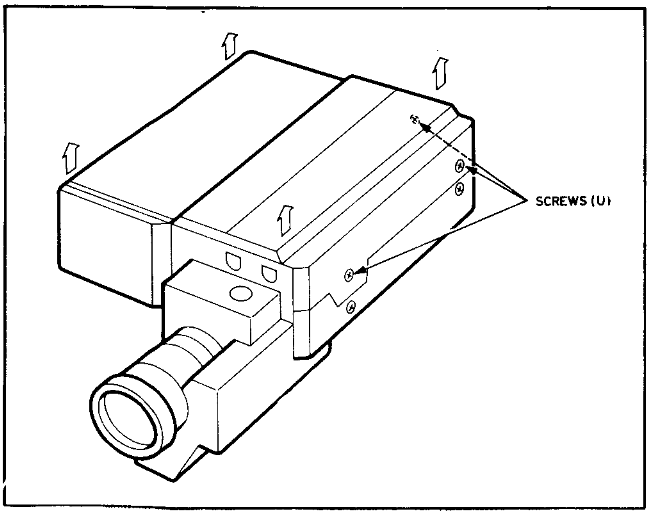


Fig. D19

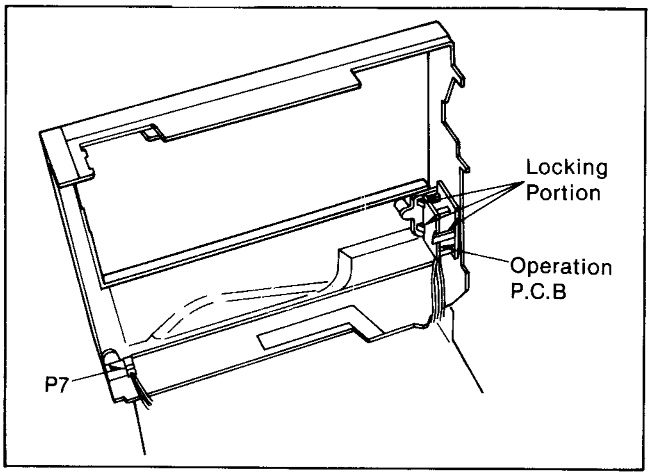

Locking Portion
Operation P.C.B
P7

Fig. D18

12.Removal of the Auto Focus Case

(1) Remove the 3 screws (V) and remove the Auto Focus case.
(2) Disconnect P01 and remove 2 screws (W).

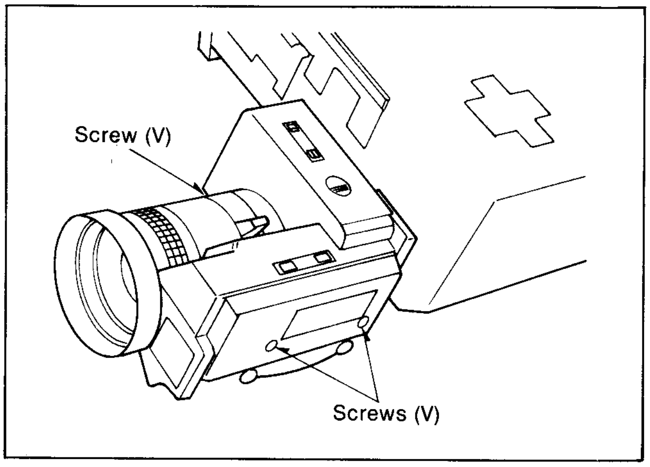

Screw (V)
Screws (V)

Fig. D20

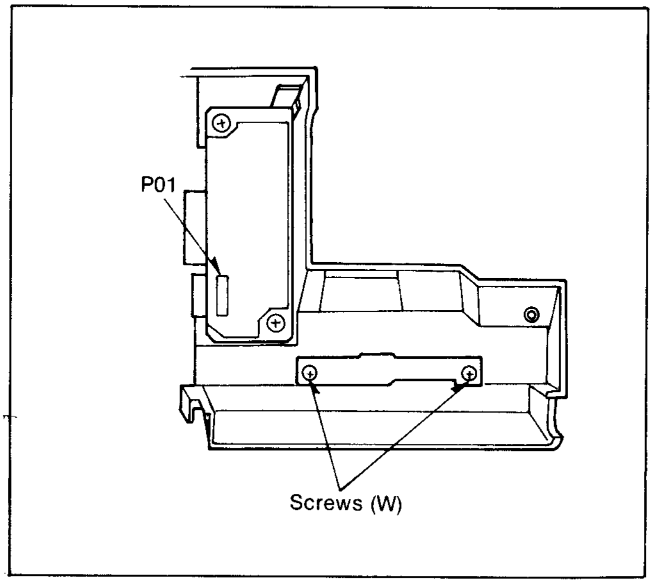

P01
Screws (W)

Fig. D21

13. Removal of the Auto Focus C.B.A.

(1) Remove 2 screws (X) and disconnect the P2, P3, P4, P5, P6 and PSD wire.
(2) Remove the Auto Focus C.B.A.

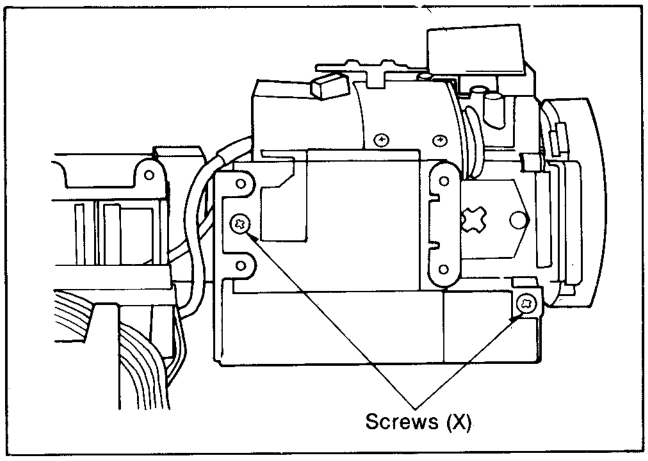


Fig. D22

14. Removal of Cassette Compartment

(1) Remove 4 screws (Y). Then remove the Cassette Compartment.

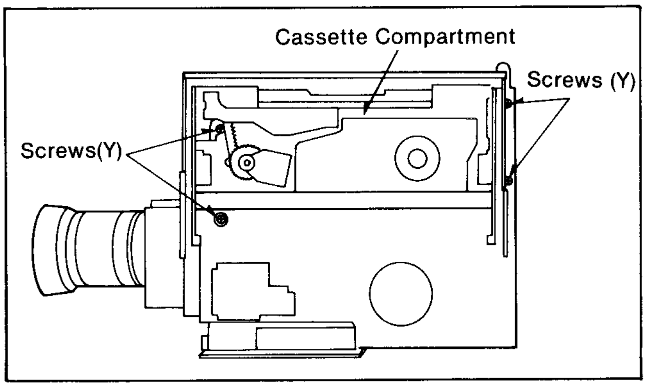

Cassette Compartment
Screws (Y)
Screws(Y)

Fig. D23

(2) Remove 2 screws (Z) and then remove the takeup and supply photo Tr. C.B.A.

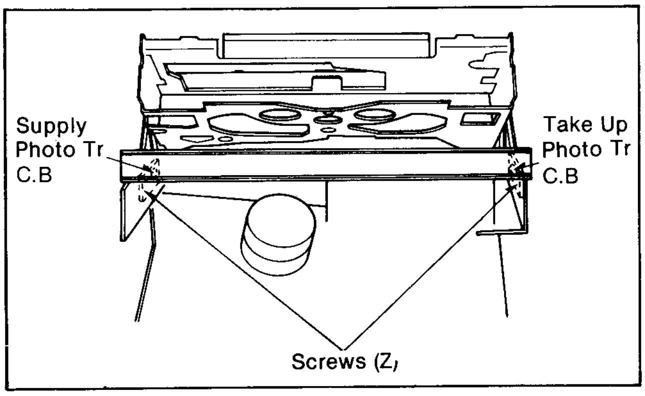

Supply Photo Tr C.B
Take Up Photo Tr C.B
Screws (Z)

Fig.D24

15. Removal of the Main C.B.A.

(1) Remove the Camera unit. Refer to Fig.D31
(2) Disconnect the P6001 and FJ11.
(3) Remove 3 screws (A).

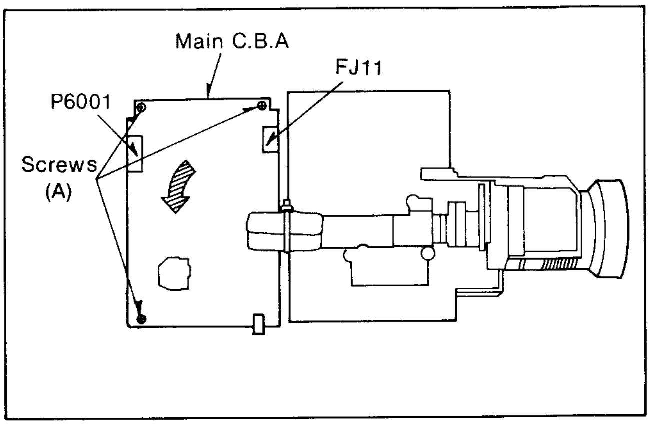

Main C.B.A
FJ11
P6001
Screws (A)

Fig.D25

16. Removal of the Luminance Chrominance C.B.A.

(1) Remove 3 screws (B). After remove the C.B.A. from the deck, remove the other 2 screws (C).
(2) Disconnect P3003, P3004, P3001 and P3002.

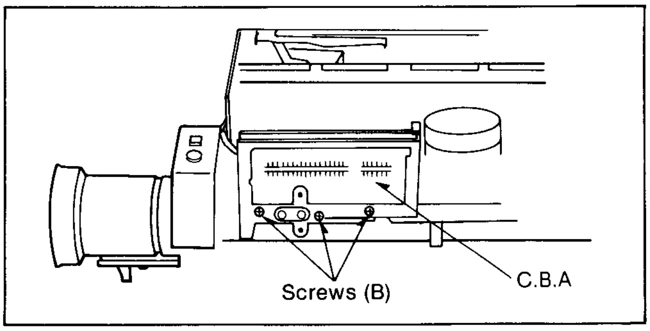

Screws (B)
C.B.A

Fig.D26

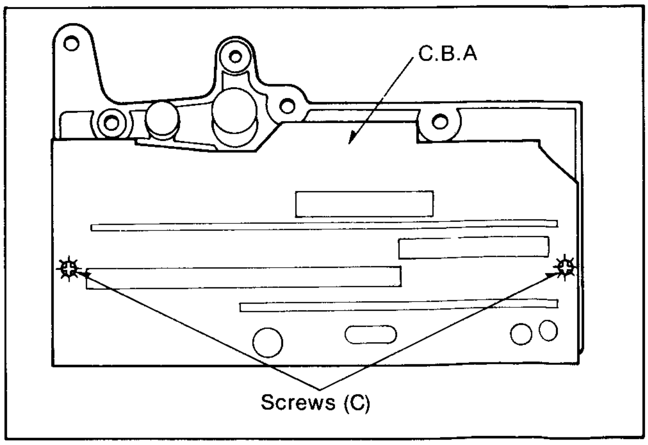

C.B.A
Screws (C)

Fig.D27

17.Removal of the Head Amp unit and Audio unit

(1) Remove 3 screws (D) and remove the Head Amp unit and Audio unit.
(2) Remove the Clamper and disconnect P4001, P4002, P4003 and P4004.
(3) Disconnect P5001 and P5002.

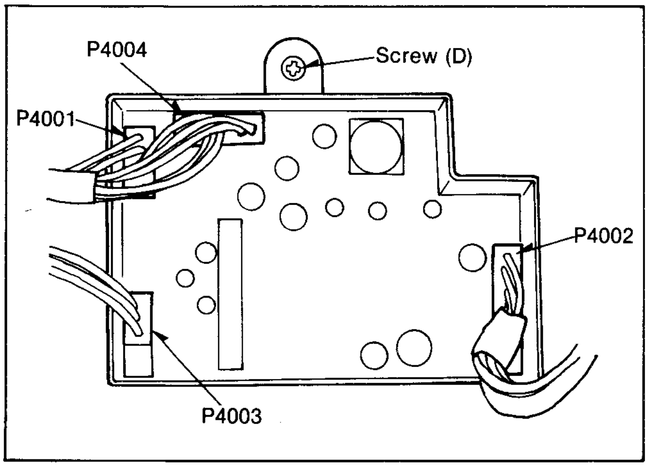

P4004
Screw (D)
P4001
P4002
P4003

Fig.D28

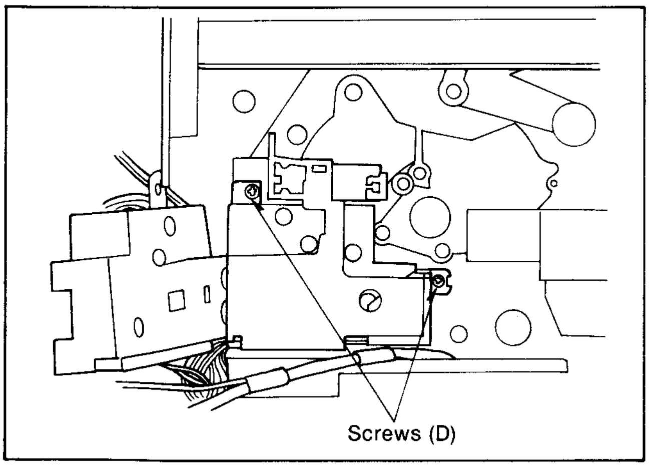


Fig.D29

18.Removal of Camera Sensor C.B.A.

(1) Remove a screw (E) and disconnect P501.
(2) Remove the Camera Sensor C.B.A.

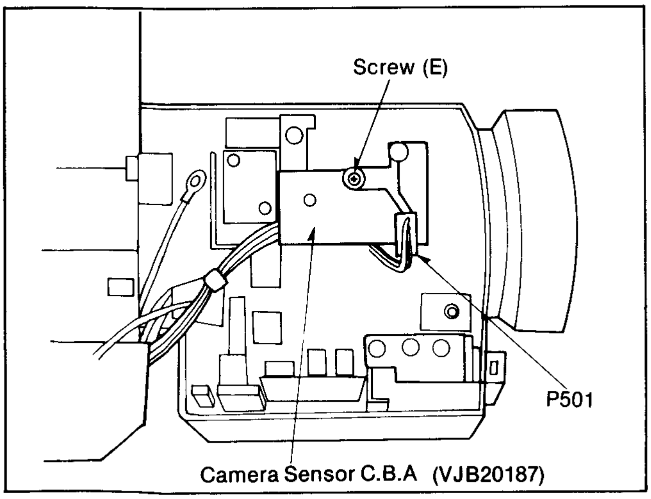

Screw (E)
P501
Camera Sensor C.B.A (VJB20187)

Fig.D30

19.Removal of the Camera unit

(1) Remove 5 screws (F) and disconnect the P601 and P2.
(2) Disconnect 3 connectors P201, P401 and P01.

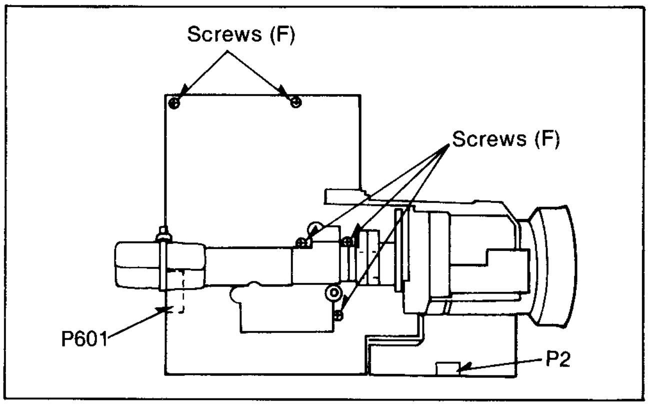

Screws (F)
Screws (F)
P601
P2

Fig.D31

20.Removal of the Camera C.B.A.
(1) Remove 2 screws (G).

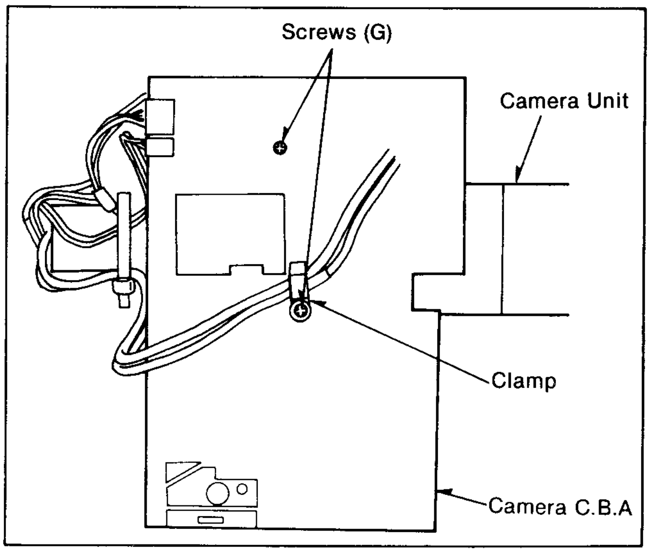

Screws (G)
Camera Unit
Clamp
Camera C.B.A

Fig.D32

2-2. REPLACEMENT

2-2-1. REPLACEMENT OF PICK-UP TUBE

1.REMOVAL OF THE PICK-UP TUBE
(1) Remove the camera unit from the VTR unit. (Refer to the DISASSEMBLY SECTION.)
(2) Unscrew 5 screws (H) and (I), and remove the coil holder and shield plate.

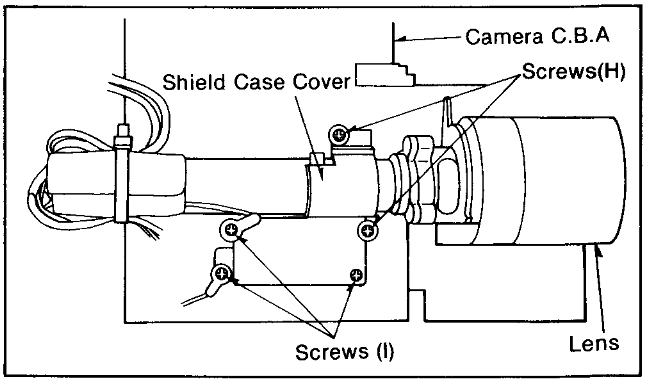

Camera C.B.A
Shield Case Cover
Screws(H)
Screws (I)
Lens

Fig. R1

(3) Unsolder the target lead "A".

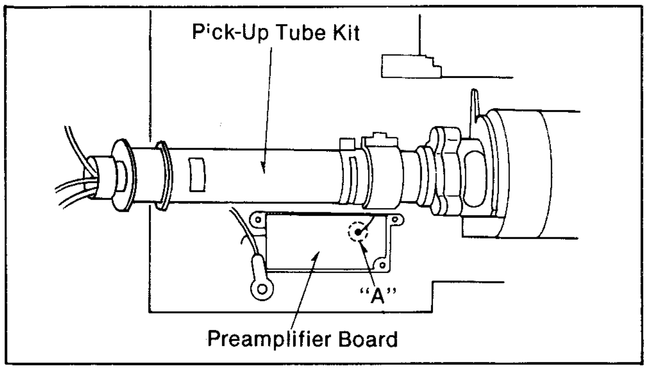

Pick-Up Tube Kit
"A"
Preamplifier Board

Fig. R2

(4) Disconnect the pick-up tube socket and bais light assembly by pulling them backward.
(5) Remove the crystal holder.
(6) Loose the clamp screw (J) and remove the pick-up tube from the deflection yoke assembly.

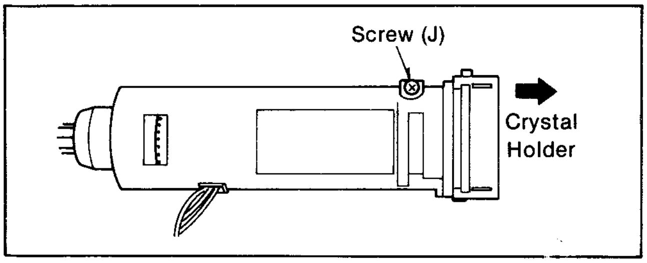

Screw (J)
Crystal Holder

Fig. R3

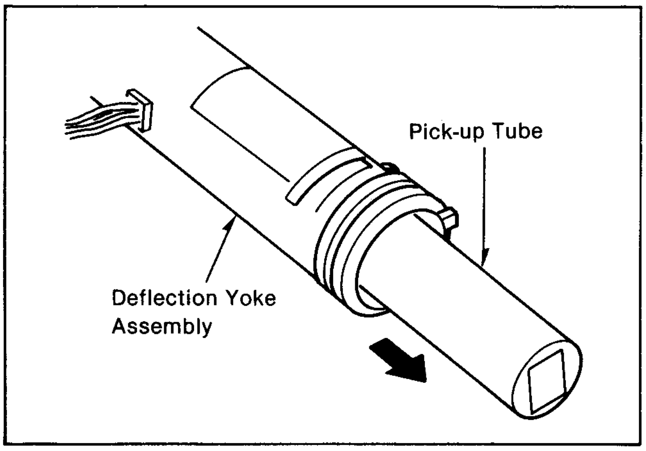

Pick-up Tube
Deflection Yoke Assembly

Fig. R4

Note:
Do not touch the pick-up tube surface when removing.

2.INSTALL OF THE PICK-UP TUBE

(1) Install the new pick-up tube (S4161P) in the deflection yoke assembly.

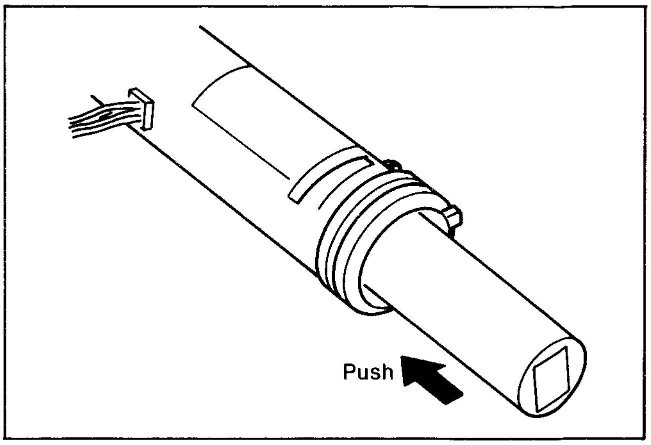


Fig. R5

(2) Line up the plastic tab on the deflection yoke assembly with the silver line on the face of pick-up tube as shown below.

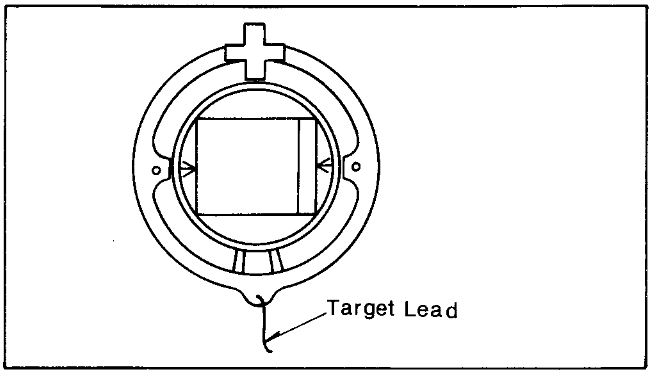

Target Lead

Fig. R6

(3) Push the pick-up tube in the deflection yoke assembly.
(4) Reverse the previous steps.

3.ADJUSTMENT AFTER PICK-UP TUBE REPLACEMENT
After replacement of the pick-up tube, readjust the Electric adjustment (refer to CAMERA Adjustment flow chart)

2-2-2. REPLACEMENT OF LENS UNIT

1. REPLACEMENT OF LENS UNIT.

(1) Unscrew 3 screws (K) and then remove the lens unit.

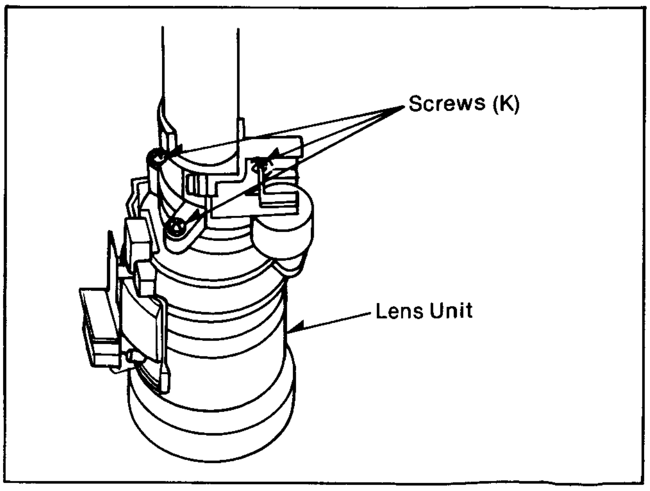

Screws (K)
Lens Unit

Fig. R7

(2) Install the new lens unit, using lens cleaning paper to keep the lens clean.
(3) Reverse the previous steps.

2.REPLACEMENT OF IRIS MOTOR UNIT

(1) First remove the lens unit from chassis.
(2) Remove the 4 screws (L) and then remove the iris motor unit.
(3) Install the new iris motor unit. Before assembly of the iris motor unit to the chassis, confirm that there are no dust on the iris motor unit.
(4) Reverse the previous steps.
(5) After replace the iris motor unit adjust the ALC/AGC adjustment (refer to CAMERA Adjustment Item 16).

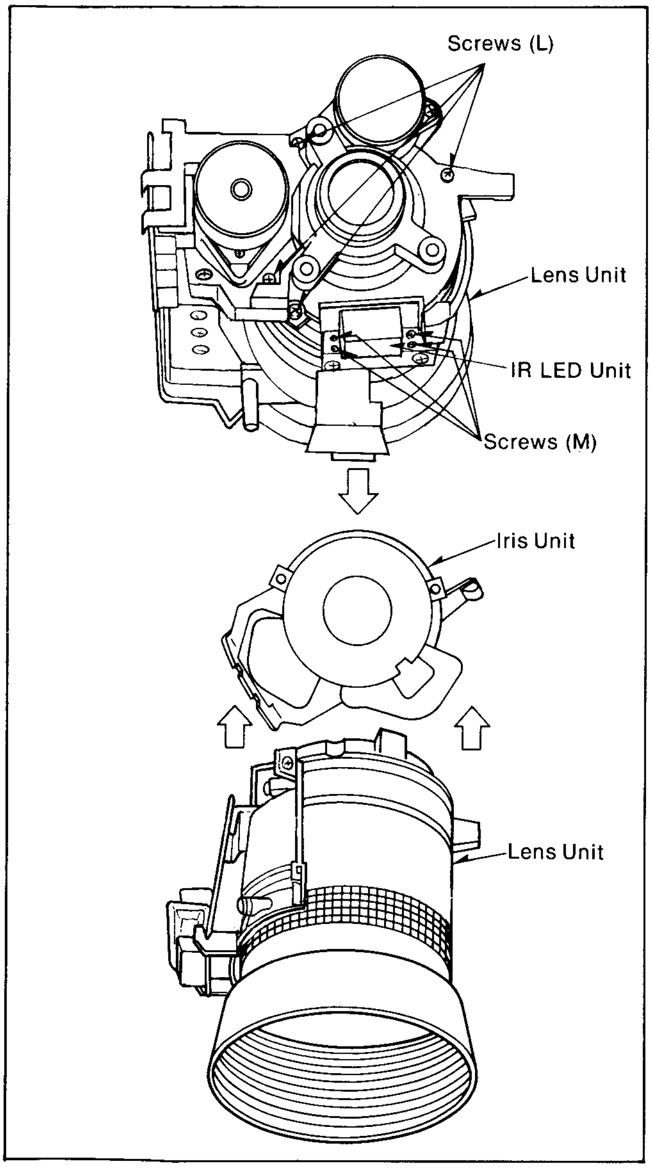

Screws (L)
Lens Unit
IR LED Unit
Screws (M)
Iris Unit
Lens Unit

Fig.R8

3.REPLACEMENT OF IR LED UNIT.

1.Remove 4 screws (M) and remove the IR LED unit. Do not loose the other screws.
When reinstalling, adjust the IR LED POSITION adjustment. (Refer to AF LED Position adjustment)

4.REPLACEMENT OF PSD UNIT and ENCORDER UNIT

(1) Remove the 4 screws (N) and remove the Lens angle (1) after removing the Camera sensor C.B.A. (refer to 2-1-2 Item 18)
(2) Remove the 3 screws (O) and remove the Lens angle (2) and AF Lens cover.

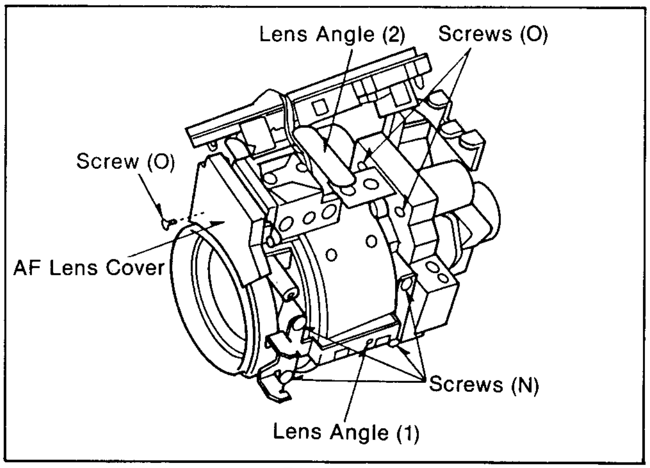

Lens Angle (2)
Screws (O)
Screw (O)
AF Lens Cover
Screws (N)
Lens Angle (1)

Fig.R9

(3) Remove the 2 screws (P) and remove the PSD unit. Do not loose the other screws.
When reinstalling, adjust the AF Receiver Adjustment (1), (2).

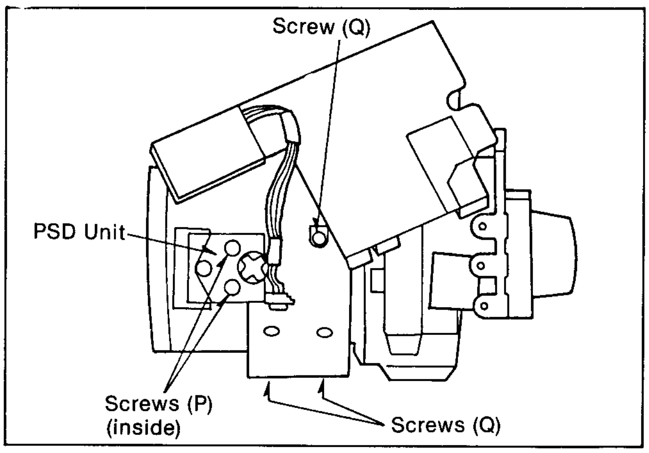

Screw (Q)
PSD Unit
Screws (P)
(inside)
Screws (Q)

Fig.R10

(4) Remove the 3 screws (Q) and remove the Encorder unit. Do not remove the other screws. When reinstalling, adjust the AF Encorder position Adjustment.
(5) Removal of Zoom Motor.
Remove the 2 screws (R) and remove the Zoom Motor.

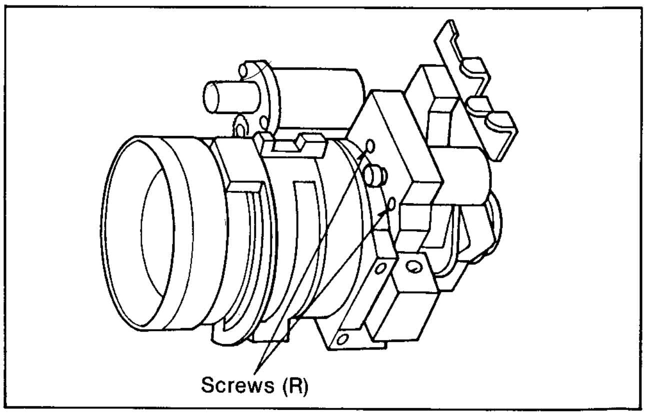


Fig.R11

2-2-3. REPLACEMENT OF DD CYLINDER UNIT

Work with extreme care when removing or replacing the DD cylinder unit.
Do not touch video heads during servicing.

(1) Remove the screw (S) to take the Earth Holder Unit out.

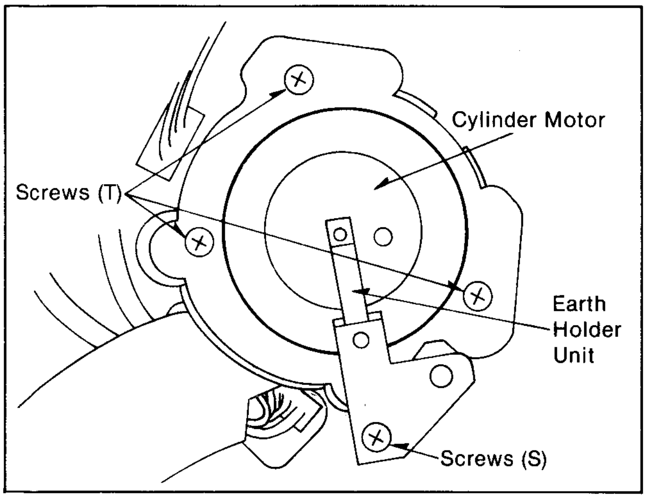

Cylinder Motor
Screws (T)
Earth Holder Unit
Screws (S)

Fig.R12

(2) Disconnect 3 connectors (P2001, P2002 and P5001).
(3) Remove the 3 screws (T) to take DD cylinder unit out.

Note:
Since there is very little clearance between DD cylinder unit gently and carefully.

(4) Reinstall the new cylinder unit, tighten the 3 screws (U). Then re-connect 3 connectors.

Note:
1. Gently rub the video head in direction of tape travel with Head Cleaning Stick.
2. After replacement, confirm performance. If any further maintenance is required, perform "TAPE INTER-CHANGEABILITY ADJUSTMENT".
3. After replacing the mew DD cylinder unit, check to see if the Earth Holder Unit is correctly set in a position within 2mm to the right from the centre of the cylinder shaft as shown below.
4. Never install the Earth Holder Unit to any position to left from the centre of the cylinder shaft, but always within a maximum of 2mm to the right of the centre of this shaft.
5. Do not touch Mounting Base with screws on the DD cylinder unit.

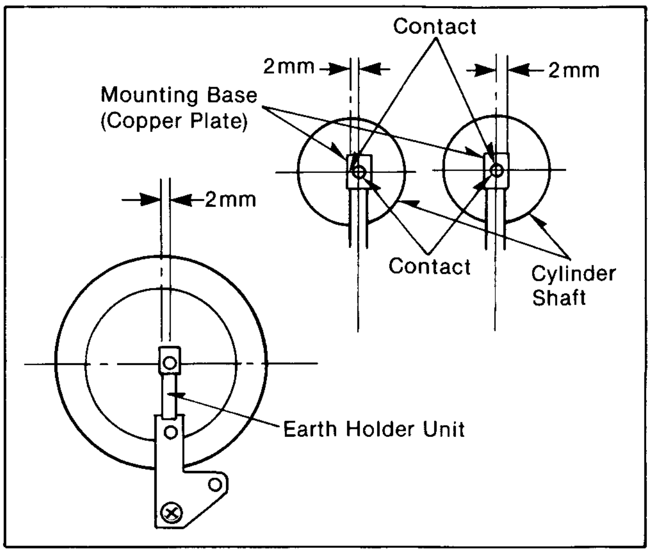

Contact
2mm
2mm
Mounting Base (Copper Plate)
2mm
Contact
Cylinder Shaft
Earth Holder Unit

Fig.R13

2-2-4. REPLACEMENT OF UPPER CYLINDER UNIT

Be sure to observe the following procedures when replacing Upper Cylinder unit.

(1) REMOVING THE UPPER CYLINDER UNIT
a. Remove 2 screws as shown in Fig.R14.
b. Unsold 8 soldered portions indicated by arrows on Circuit Board.
c. Remove the Upper Cylinder Unit by lifting it upwards.

Note:
Solderd portion can be easily removed by using solder sucking wire, etc.

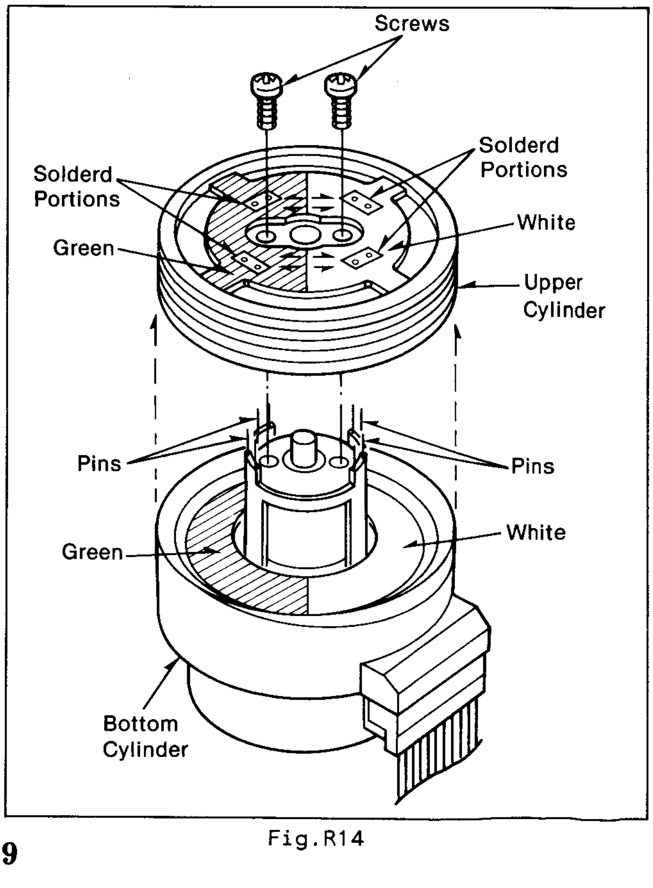

Screws
Solderd Portions
Solderd Portions
White
Green
Upper Cylinder
Pins
Pins
White
Green
Bottom Cylinder

Fig.R14

(2) REINSTALLING THE UPPER CYLINDER UNIT

The upper Cylinder Unit can be reinstalled by reversing the removal procedure.
However, when reinstalling, it must be extremly careful so that both the white and green portions of C.Board on the Upper Cylinder Unit will correctly match the white and green portions of the circuit Board on Bottom cylinder as shown in Fig.R15.

Note:
If the Upper Cylinder unit is reversely installed, no colour will appear when playing back a pre-recorded tape.

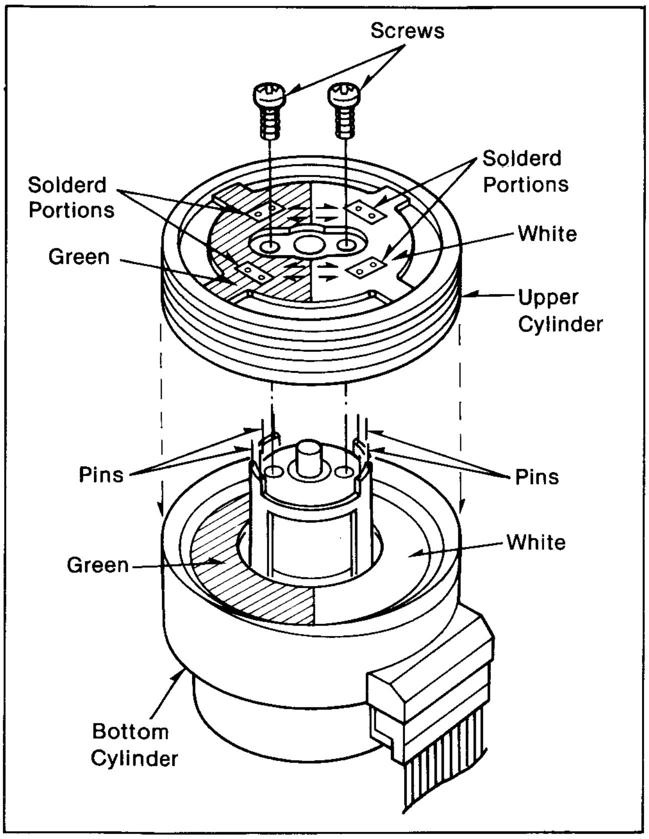

Screws
Solderd Portions
Solderd Portions
Green
White
Upper Cylinder
Pins
Pins
Green
White
Bottom Cylinder

Fig.R15

2-2-5. REPLACEMENT OF CAPSTAN STATOR UNIT

- Equipment Required:
  Reel Table Height Gauge (VFK0190)
- Specification:............0.5+-0.05mm

(1) Remove the 2 screws and take belt cover out. After that remove the capstan belt.
(2) Tighten the Thrust Adjust Screw fully and pull the capstan rotor.

Note:
In this time pay attention not to lose 2 Dust Seals.

(3) Replace the new rotor inserting 2 Dust Seals.

Note:
1. Pay attention to the replaced new rotor not to shock because of magnet absorbtion. So hold the rotor firmly and replace it carefully.
2. In this replacement, do not touch the Capstan shaft by any hard material like drivers or tweezers.

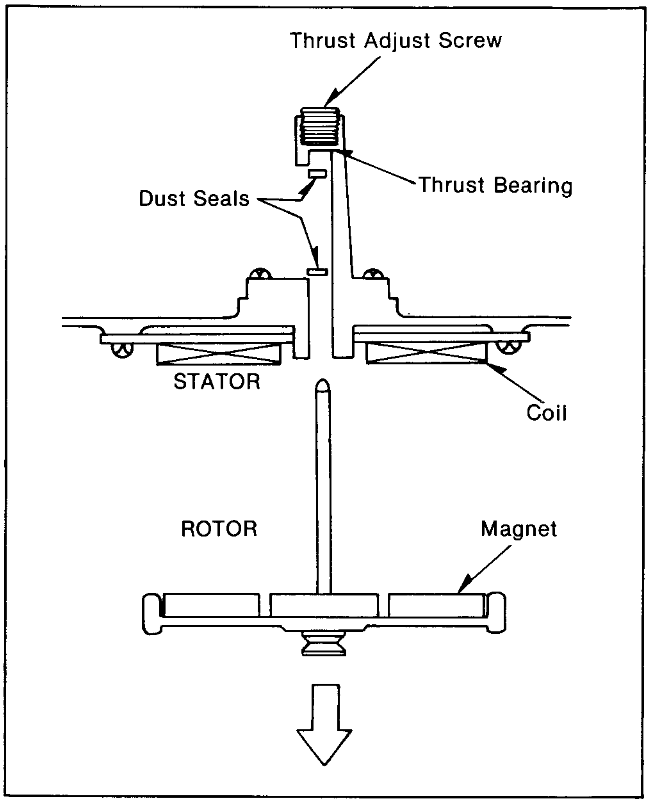

Thrust Adjust Screw
Dust Seals
Thrust Bearing
STATOR
Coil
ROTOR
Magnet

Fig.R16

(4) After replacement, wipe off the Capstan shaft to remove oil, grease or dust.
(5) Unscrew Thrust Adjust Screw till the rotor is just touching to the stator.
(6) Turn this mechanism upside down and place the Reel Table Height Gauge so that the gauge fits to the chassis correctly, and read the height.
(7) Tighten and adjust the Thrust Adjust Screw so that the height difference just meets in the specification (0.5+-0.05mm) reading the height from the gauge.

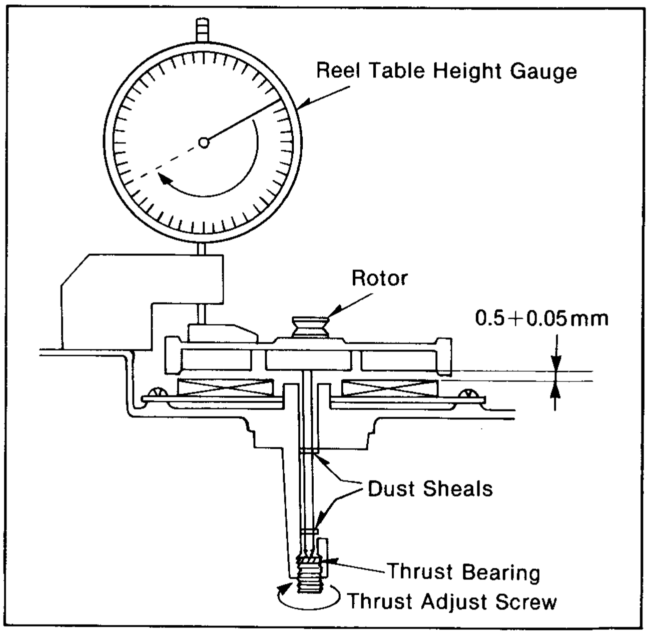

Reel Table Height Gauge
Rotor
0.5+0.05mm
Dust Sheals
Thrust Bearing
Thrust Adjust Screw

Fig.R17

Note:

If the Thrust Adjust Screw is fully opened, you have to pay attention not to lose Thrust Bearing.
When you fix it, confirm that the direction of Thrust Bearing is correct as shown below.

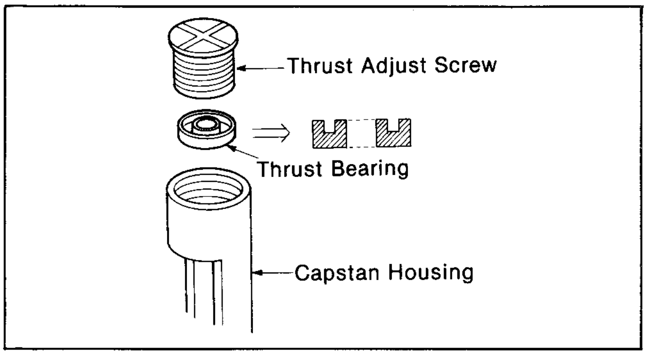

Thrust Adjust Screw
Thrust Bearing
Capstan Housing

Fig.R18

2-2-6. REPLACEMENT OF TENSION BAND

(1) Remove the cassette compartment.
(2) Remove a retaining ring and take out a Rew Arm (A) Unit.
(3) Remove a retaining ring and a shap washer and take out a tension Band Unit.

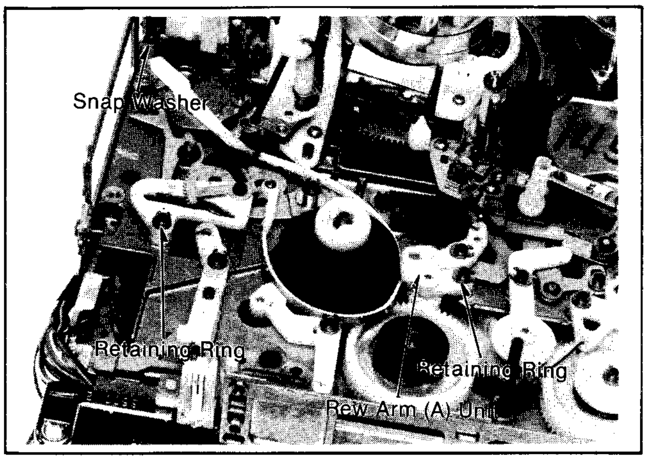

Snap Washer
Retaining Ring
Retaining Ring
Rew Arm (A) Unit

Fig.R19

(4) Remove a Tension Band from Band Release Arm and Tension Arm Unit.

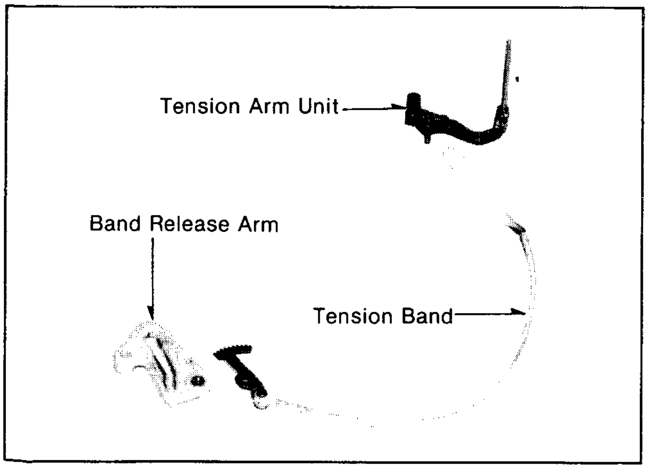

Tension Arm Unit
Band Release Arm
Tension Band

Fig.R20

(5) Replace a new Tension Band by proceduring reverse steps shown above.

2-3. MECHANICAL ADJUSTMENT PROCEDURES

2-3-1. PROCEDURE FOR CLEANING OF UPPER CYLINDER UNIT

(1).Position the video head to clean and hold the upper cylinder to keep it from turning while cleaning.
(2).Gently rub the video head in direction of tape travel whith Head Cleaning Stick.
(3).Repeat for the other three video heads.

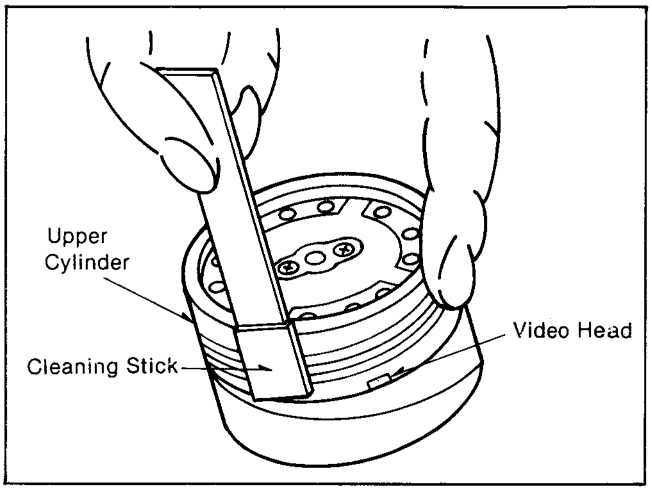

Upper Cylinder
Video Head
Cleaning Stick

Fig. M1

Note:
(1) Do not rub vertically.
(2) Do not apply any pressure to heads.
If contamination is not easily removed, continued gentle wiping will usually remove the substance.

2-3-2. CONFIRMATION OF BRAKE TORQUE

- Equipment Required:
  Dial Torque Gauge
  Adaptor for Gauge
- Specification:---------15~55g-cm(stop)

(1) Remove the cassette compartment by unscrewing 4 screws.
(2) Attach the adaptor to the torque gauge and place the unit in STOP mode.
(3) Place the torque on the reel table. The weight of gauge should not rest on the reel table.

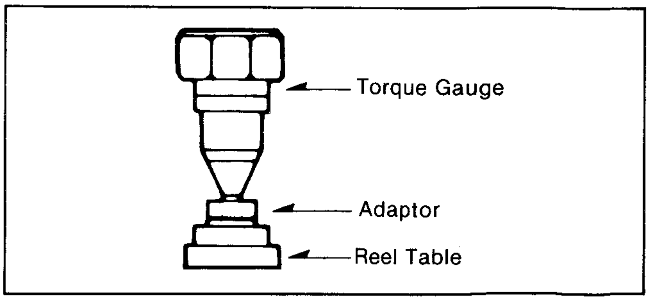
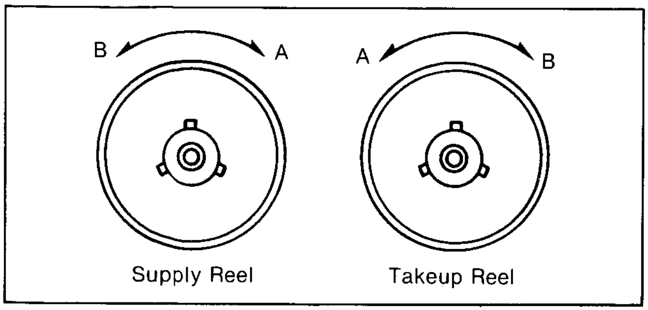

Torque Gauge
Adaptor
Reel Table

Fig. M2

(4) Turn torque gauge in either direction indicated in the Fig.M2, and read the gauge when the brake begins slipping.

Note:

If proper brake torque can not be obtained,check the both take-up and supply clutch gear.


B
A
A
B
Supply Reel
Takeup Reel

	A	B
Takeup	15~55g-cm	15~55g-cm
Supply	15~55g-cm	15~55g-cm

Fig. M3

2-3-3. TENSION POST POSITION ADJUSTMENT

- Specification :---------2.4mm~2.9mm

(1) Remove the Cassette Up unit by unscrewing 4 screws. (Refer to the disassembly procedures titled in Removal of the Cassette Compartment).
Place the unit in Play mode by rotating Drive Gear (A) in clockwise shown below.

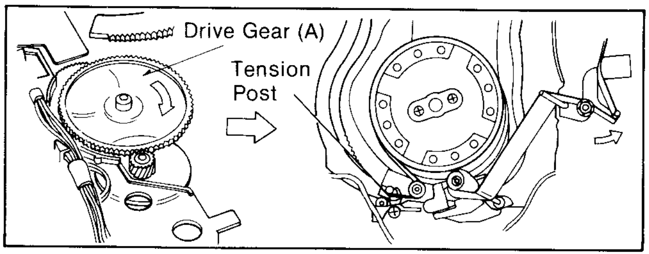

Drive Gear (A)
Tension
Post

Fig. M4

Note:
In this case, make sure that the power is not applied.

(2) Loosen the screw (A) a little bit and adjust the Tension Post adjustment plate so that the "Distance (A)" shown below becomes just meet in the specification (2.4m~2.9mm).
(3) Tighten the screw (A) to fix it.

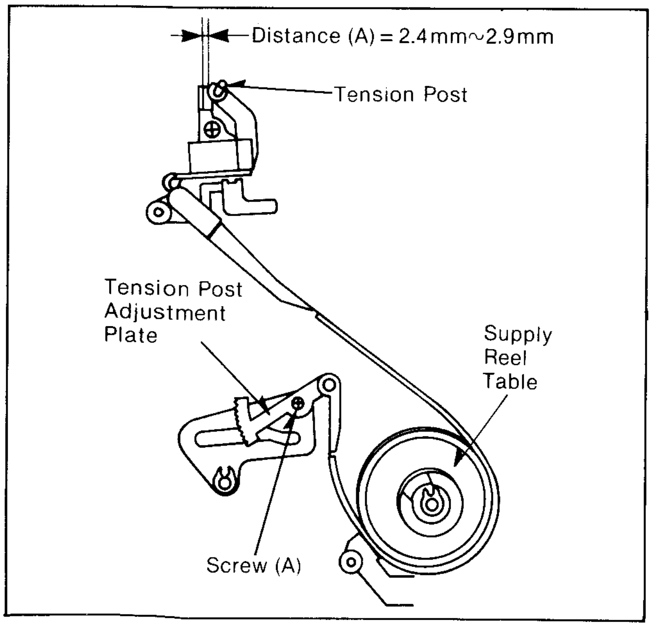

Distance (A) = 2.4mm~2.9mm
Tension Post
Tension Post
Adjustment
Plate
Supply
Reel
Table
Screw (A)

Fig. M5

2-3-4. BACK TENSION ADJUSTMENT

(1) SYMPLIFIED BACK TENSION ADJUSTMENT

(1).Place the unit in Play mode as the same way described in previous procedure, Tension Post Position Adjustment item 2.
(2).Loosen the screw (B) a little bit and adjust the Tension Adjustment piece so that the second cog of Tension Adjustment piece comes just stright to its vertical direction as shown below.
(3).Tighten the screw (B) to fix it.

Note:
By this simplified adjustment, back tention comes just in specification normaly in spite of parts tolerance.

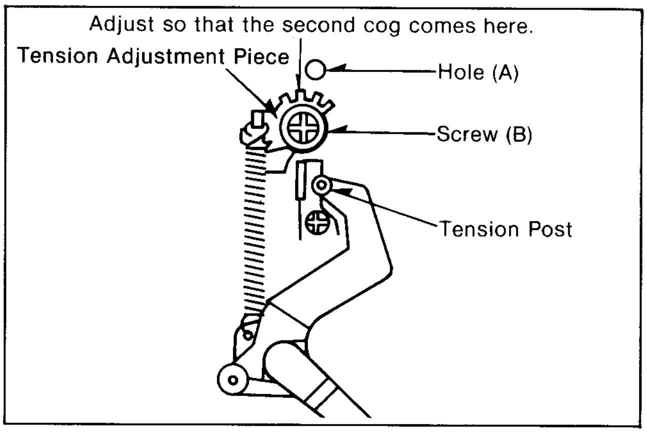

Adjust so that the second cog comes here.
Tension Adjustment Piece
Hole (A)
Screw (B)
Tension Post

Fig.M6

(2) COMPLETE BACK TENSION ADJUSTMENT

For the strict and accurate back tension adjustment, however, following procedures should be done.

- Equipment Required:
  Back Tension Meter
  Fine Adjustment Screwdriver
  VHS Cassette Tape (E-120)
- Specification:-------------19~23g

(1).Playback the cassette tape recorded in SP mode from its beginning and wait until tape running has stabilized.
(for approx. 10 to 20 seconds)
(2).Loosen the screw (B) and fit the Fine Adjustment Screw driver by putting into its small Hole (A).
(3).Move the Tension Adjust piece in either of direction.
(4).Upon completion of adjustment, tighten the Screw (B).
(5).Confirm the back tension is in the specification by using Back Tension Meter with great care to avoid touch to any parts and keeping in good condition with tape while measuring.

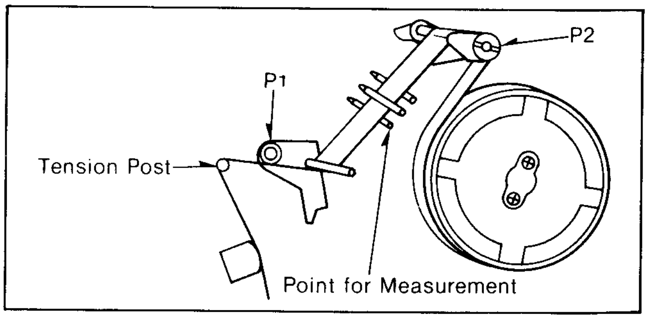

P2
P1
Tension Post
Point for Measurement

Fig.M7

2-3-5. REEL TABLES HEIGHT ADJUSTMENT

- Equipment Required:
  Post Adjustment Plate
  Reel Table Height Gauge
- Specification-----------0~-0.15mm

Note:
Cut-out on Post Adjustment Plate is reference of reel table height and their height is measured based on this reference.

1. Place the post adjustment plate on the reels, and put the gauge on the plate. Set the gauge to zero "0" with the foot scraper of the gauge touching the cut-out portion of the plate.

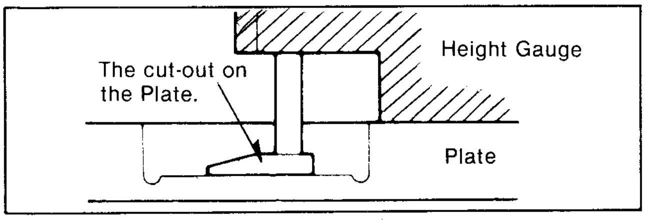


Fig. M8

2. Then measure the height of reel table and confirm the difference just performed in former step as shown below. Do the same way for the other reel table.

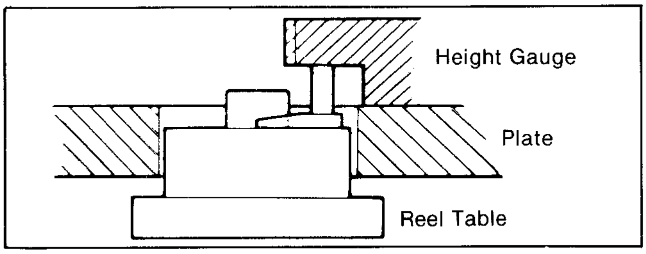


Fig. M9

3. If a height difference in readings between the cut-out portion of plate and reel tables is not 0~-0.15mm (higher or lower), adjust the height of the reel to obtain specified height.
4. For adjustment add or reduce a washer.

2-3-6. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS

- Equipment Required:
  Hex Wrench (VFK0305:0.71mm)
  Post Adjustment Plate
  Reel Table Height Gauge
  Nut Driver
  Post Adjustment Screwdriver

(1). Remove the cassette compartment from the mechanical chassis and the cylinder barrier.

(2). Put the post Adjustment plate on the chassis.

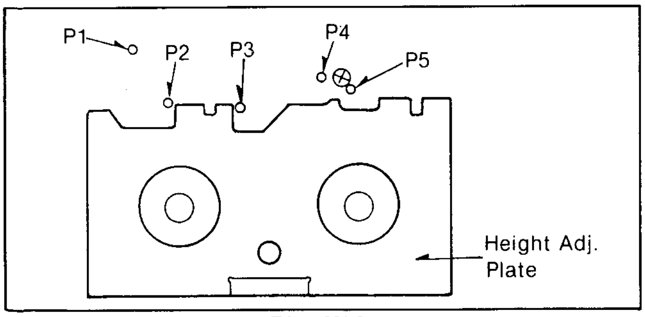


Fig.M10

(3). First install the post adjustment plate and move all posts if required so that they are just in the position for stop mode.
(Lower end of post, tape guide, should be lower than foot scraper of fixture.) Loosen a hex screw located on the lower portion of posts (P2 & P3) then turn the top of the posts with post adjustment screwdriver.

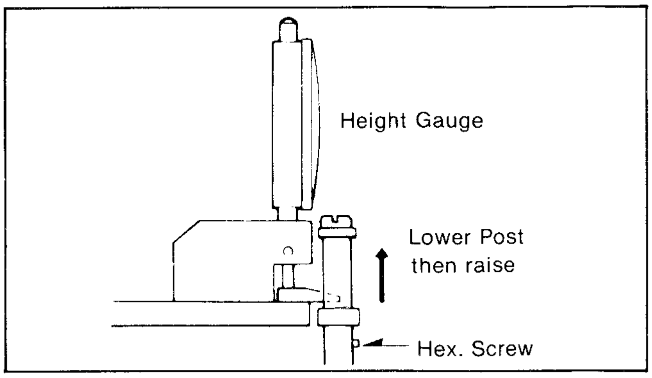


Fig. M11

(4). Place the height gauge on the adjustment plate and place the foot scraper of gauge to the post.

(5). Set the height gauge to zero and slowly raise the post until it just touches the foot scraper of gauge. For adjustment of P1, P4 & P5, use the nut driver.

Note:
Upon completion of adjustment, tighten hex. Screws on P2 and P3 and install the post cap on P5. When the post cap on P5 is reinstalled, orient it as shown below viewing from the direction indicated by the arrow.

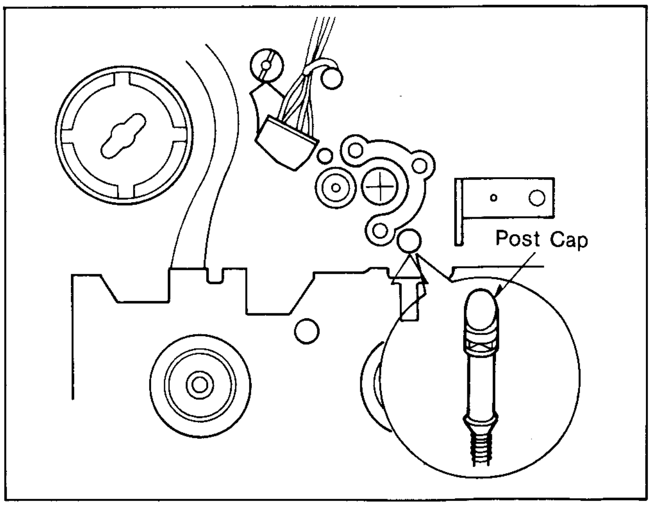


Fig. M12

(6). Reinstall the cassette compartment.

(7). Play back a normal cassette tape and make sure that the edges of the tape are not curling along with the edge of the posts P1,P2,P3,P4 and P5 post as shown in next page.

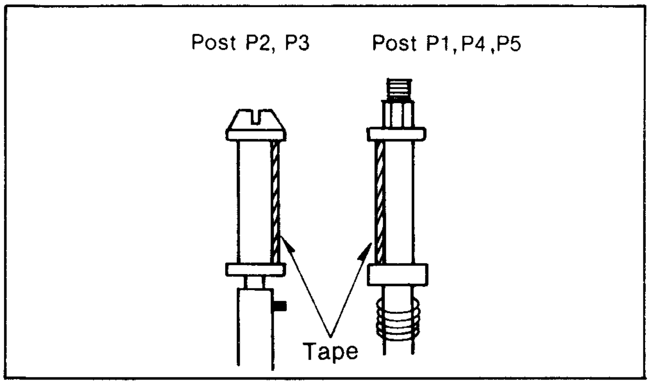

Post P2, P3
Post P1,P4,P5
Tape

Fig. M13

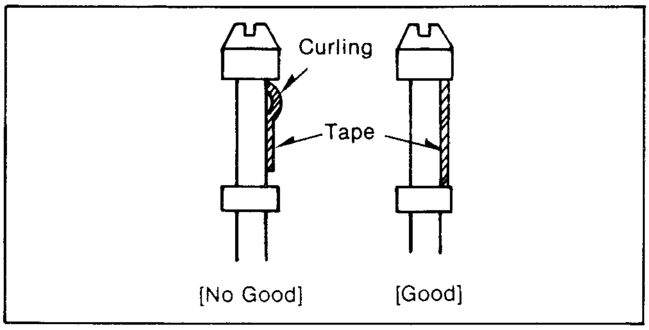

Curling
Tape
[No Good]
[Good]

Fig. M14

(8).If curling appears, readjust each post.

2-3-7. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

To perform these adjustment/confirmation procedures, make sure that the tracking control is set into the detent (fixed) position.

- Equipment Required:
  Alignment Tape (VFJ8125H3F)
  Post Adjustment Screwdriver
  H-Position Adjustment Screwdriver
  Hex. Wrench (VFK0305:0.71mm)
  Nut Driver

(1) CONFIRMATION/ADJUSTMENT OF ENVELOPE OUTPUT

(1).Connect the oscilloscope to the output of the Head Amp as shown below.

Note:

Head Amp output and the head switching pulse input for triggering the oscilloscope are shown in the Luminance Process Block Diagram.

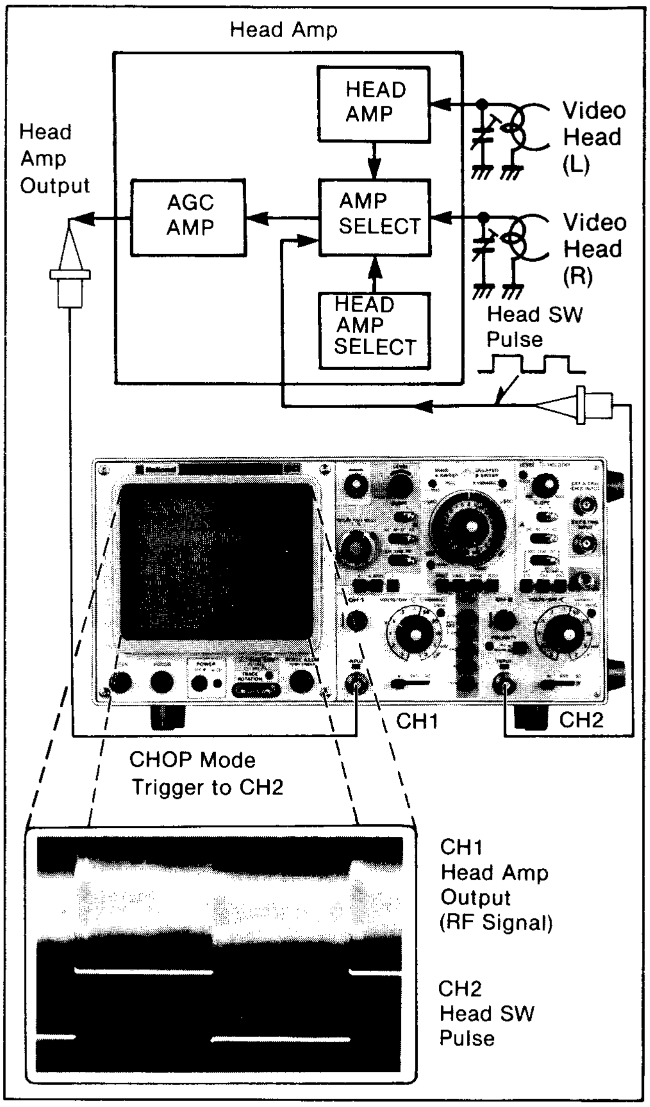

Head Amp
HEAD AMP
AMP SELECT
AGC AMP
HEAD AMP SELECT
Head Amp Output
Video Head (L)
Video Head (R)
Head SW Pulse
CH1
CH2
CHOP Mode
Trigger to CH2
CH1 Head Amp Output (RF Signal)
CH2 Head SW Pulse

Fig. M15

(2).Playback the monoscope portion of the alignment tape and adjust posts P2 and P3 while watching the scope display so that RF envelope on the scope becomes as flat as possible.

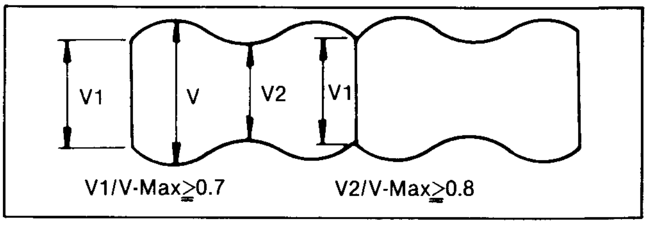

V1
V
V2
V1
V1/V-Max≥0.7
V2/V-Max≥0.8

Fig. M16

(3).If scope display is as follows, adjust the height of P2 shown below.

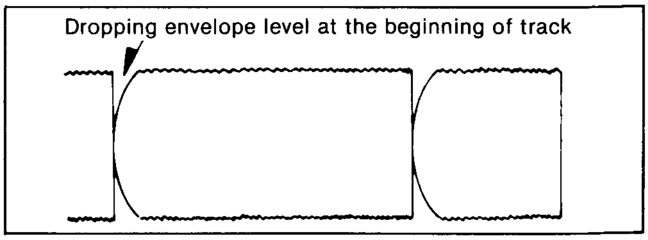

Dropping envelope level at the beginning of track

Fig. M17

(4). If the scope display is as follows, adjust the height of P3 shown below.

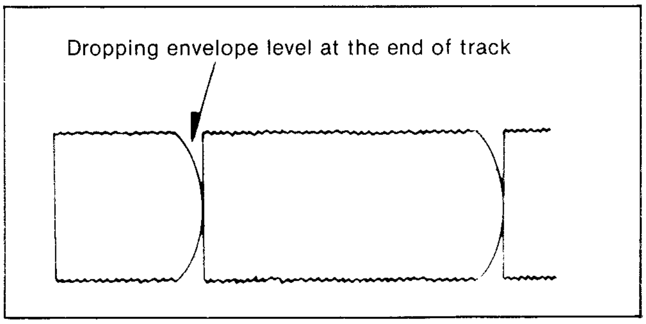

Dropping envelope level at the end of track

Fig. M18

(5). When P2 and P3 posts are adjusted correctly the scope display becomes as shown below.

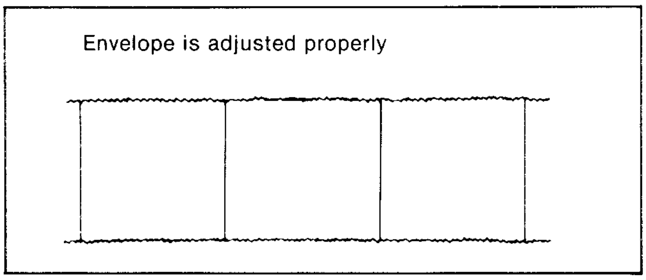

Envelope is adjusted properly

Fig. M19

(6). When adjustment is required, turn slowly and wait for servo lock. Be sure the tape travel contacting with the post is as shown below.

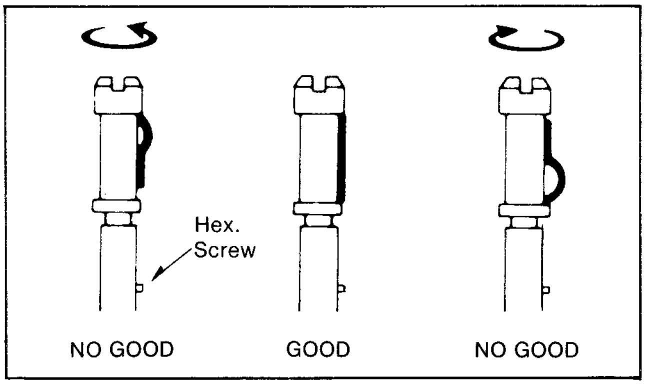

Hex.
Screw
NO GOOD
GOOD
NO GOOD

Fig. M20

(2) CONFIRMATION OF A/C HEAD HEIGHT

Note:

Unless the A/C Head is replaced, this procedure should not be performed.

(1). Looking at the lower edge of the control head within the tape running, ensure that the lower edge of the tape runs along the lower edge of the control head. If it doesn't, slightly turn the nut (A) in either direction to correct. Clockwise to lower the head and counterclockwise to raise it.

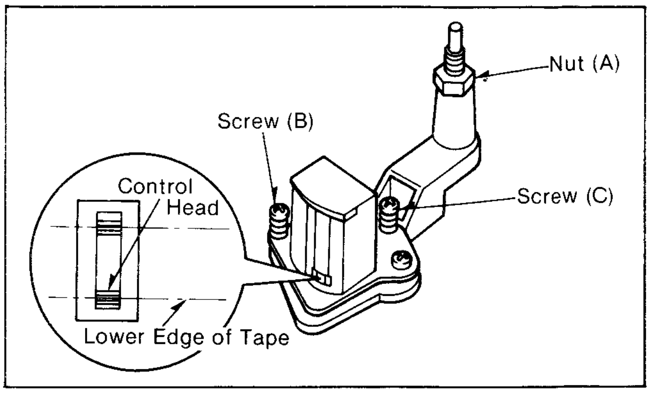

Nut (A)
Screw (B)
Screw (C)
Control Head
Lower Edge of Tape

Fig. M21

(3) CONFIRMATION OF TILT OF A/C HEAD

This procedure should be performed after the height adjustment of P4.

(1). Play back the tape and confirm the tape runs between lower and top limiters of post. And confirm the condition of tape running.

(2). If the adjustment is required, turn counterclockwise the screw (C) so that the curling is apparent with lower edge of P4. Then turn clockwise the screw (C) so that the curling is smooth out.

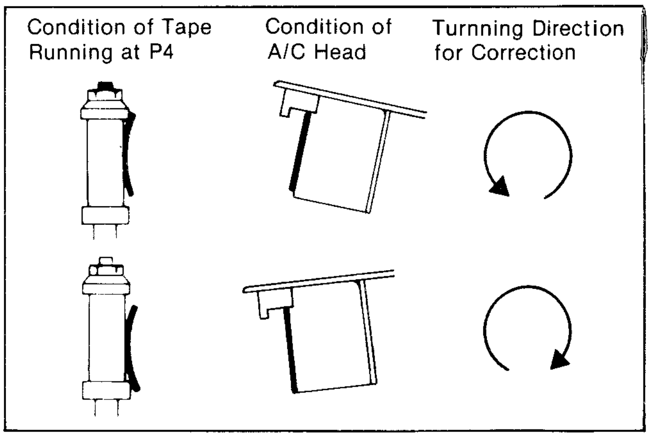

Condition of Tape Running at P4
Condition of A/C Head
Turnning Direction for Correction

Fig. M22

(4) ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

(1). Connect the oscilloscope to the Audio Output on the right side of the unit.

(2). Play back the monoscope portion (6KHz, Mono) of the alignment tape.

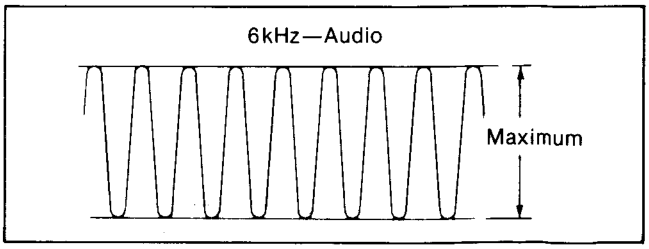

6kHz—Audio
Maximum

Fig. M23

(3). Adjust the screw (B) on the head base so the output level becomes maximum.

(5) HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD

(1). Set the tracking control to the detent (fixed) portion. Connect the oscilloscope to the output of the Head Amp.
(2). Playback the monoscope portion of the alignment tape and confirm the RF signal envelope figure.
(3). If adjustment is required, insert an H-position adjustment screwdriver into the Adjustment Nut.
(4). Slowly turn the Adjustment Nut clockwise until the envelope output is maximized.

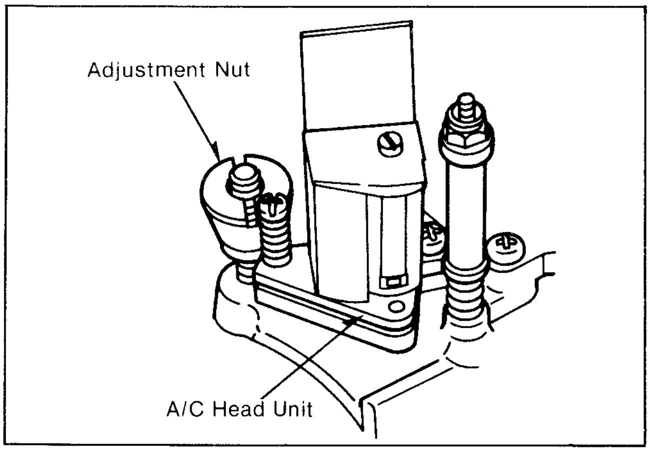

Adjustment Nut
A/C Head Unit

Fig. M24

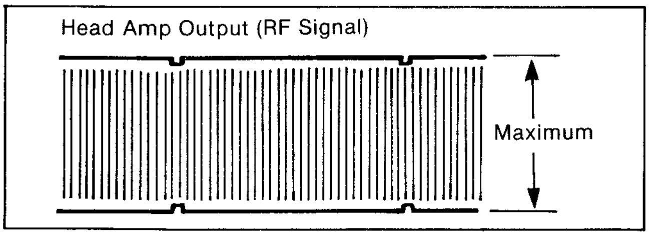

Head Amp Output (RF Signal)
Maximum

Fig. M25

2-3-8. ADJUSTMENT OF F.G. HEAD GAP

- Specification:-----------0.17~0.18mm

(1). Slightly loosen the 2 screws.
(2). Put the paper which is used for cover page of this volume into the gap between F.G.Head and Capstan rotor. (The thickness of the cover page is approx 0.17mm)
(3). After adjustment, tighten 2 screws.

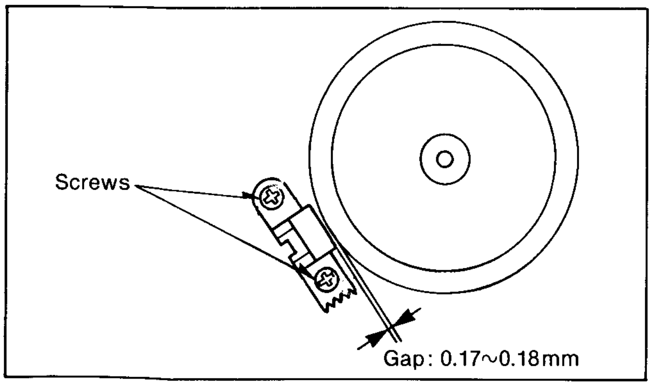

Screws
Gap: 0.17~0.18mm

Fig. M26

Note:
Do not touch the circumferential surface of rotor and keep any magnetizable material away.

2-3-9. ASSEMBLY AND ADJUSTMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch.
Therefore the relation between the mode select switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on.
If these parts are fixed in properly, the unit will be unloaded or compulsorily stopped.
And it will result being damaged at any mechanical or electrical parts.

(1) ASSEMBLY PROCEDURES OF LOADING RINGS AND LOADING GEARS

(1). Install a Loading-Ring T (1) unit and a Loading Gear (B) so that both triangle marks meet each other as shown below.

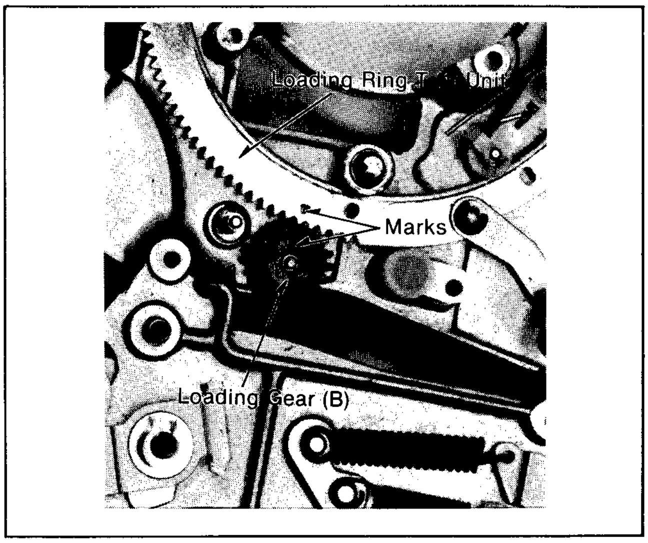

Loading Ring T (1) Unit
Marks
Loading Gear (B)

Fig. M27

(2). Install a Loading Gear (A) and next fix a Loading Ring S (1) Unit so that the holes of Loading-Ring S(1) Unit and T(1) Unit meet each other as shown below.

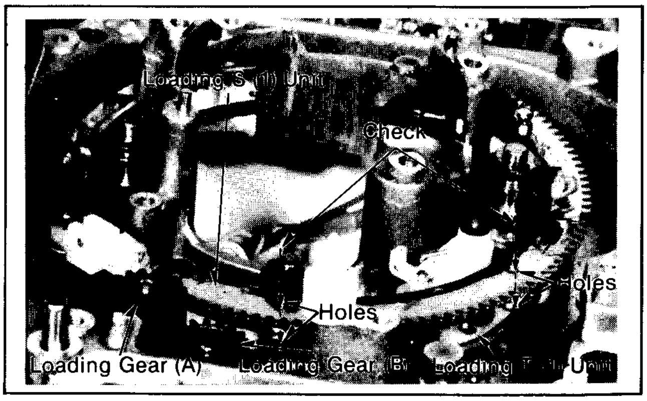

Loading S (1) Unit
Check
Holes
Holes
Loading Gear (A)
Loading Gear (B)
Loading T (1) Unit

Fig. M28

Note:
Pay attention that the washers are remaining under the loading gears or any other parts.

(2) ASSEMBLY PROCEDURES OF TAKE-UP LOADING GUIDE AND TAKE-UP LOADING POSTS UNIT

(1).Install Loading Guide T Unit and Take-up Post Stopper.
In that time, the small projection of a Loading Link T Unit must be inserted into a gap of Loading Guide T Unit.

(2).Fix a Take-up side Loading Post Unit holding the small projection of the Loading Link T Unit and install a T Shaft Holder Unit.

(3) ASSEMBLY PROCEDURES OF SUPPLY LOADING GUIDES AND SUPPLY LOADING POSTS UNIT

(1).Install 2 Supply Loading Guides screwing 4 screws.

(2).Slide a Supply Loading Post Unit into a gap between the Loading Guide S1 and S2 hooking a Connection Rod to a Connection Tie Unit as shown below.

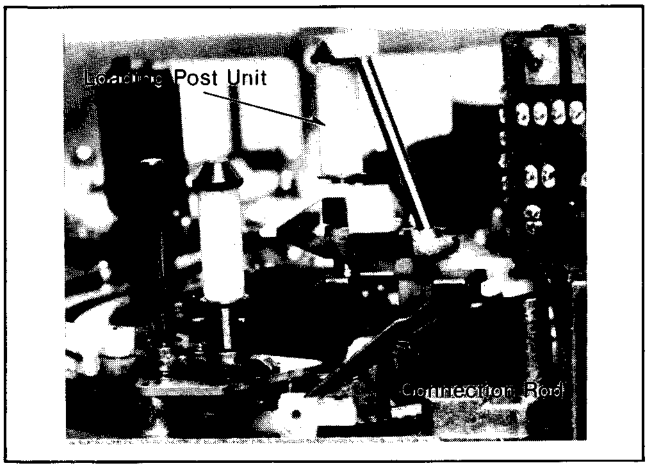


Fig. M29

(3).Set the Supply Loading Post Unit into Stop position as shown below.

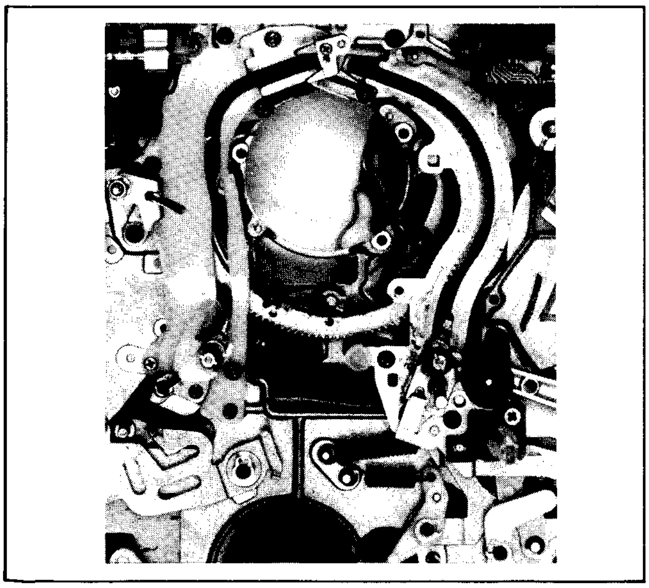


Fig. M30

(4).Install a V Stopper Base and a Supply Post Stopper.

(4) ASSEMBLY PROCEDURES OF MAIN ROD

(1).Place a Main Rod inserting 3 Thrust Washers and then insert 3 washers.
After that, fix them using 2 retaining rings as shown below.

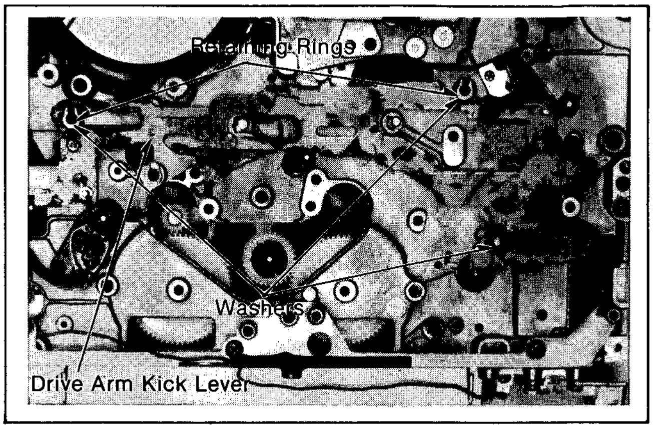


Fig. M31

(2).Install a Drive Arm Kick Lever hooking a Drive Arm kick Lever Spring and fix it using ring.

(5) ASSEMBLY PROCEDURES OF CAM GEAR AND SECTOR GEAR

(1).Make sure that the hole on a Main Rod just should coincide with the hole on chassis as shown below and install a Cam Gear should coincide with he hole between a Cam Gear and the chassis. Then install a retaining ring.

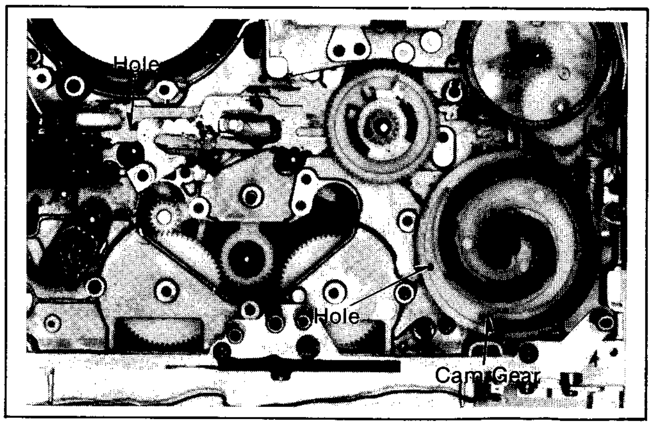


Fig. M32

(2).Install a Loading Gear (C) keeping the relation as shown below.

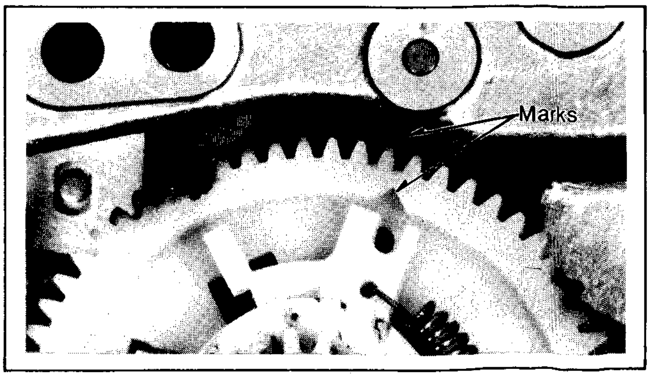


Fig. M33

(3).Install a Sector Gear as shown below.

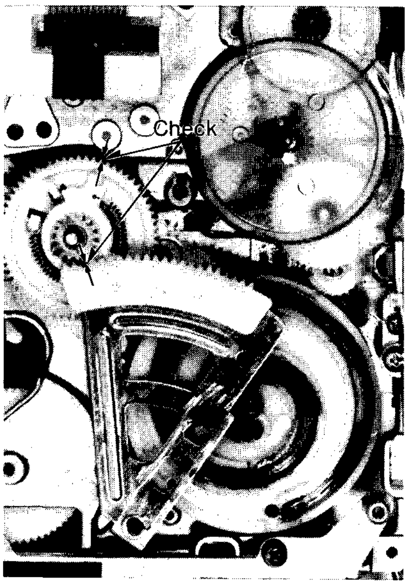


Fig. M34

(4).Fix a SG Limiter by 2 retaining rings.

(6) ASSEMBLY PROCEDURES OF MODE SELECT SWITCH

(1).Perform this procedures after confirming the complete setting of mechanical parts.
First of all, confirm that the hole on a Main Rod is meeting with a hole on a chassis.
(2).Move the moving contact of a Mode Select Switch into Stop position as shown below.

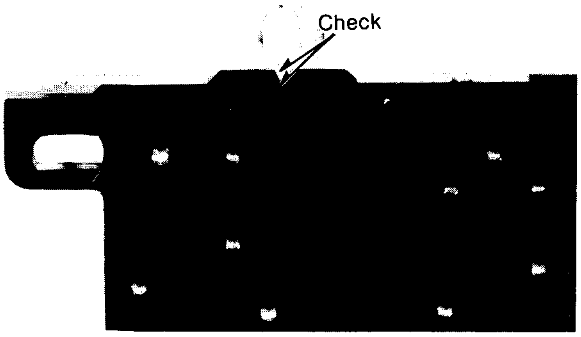
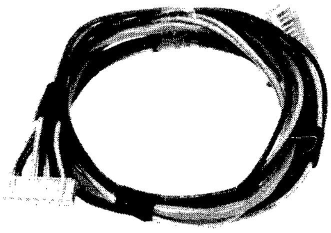


Fig. M35

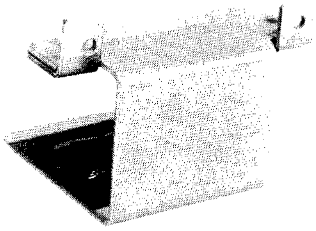
(3).Install the Mode Select Switch keeping these relation written in item (1) and (2) by screwing 2 screw.

Servicing Fixtures & Tools

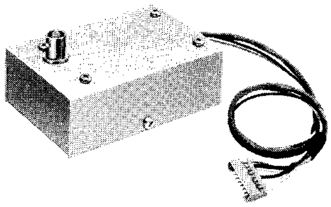
VFK0302 9 Pin Connection Cable



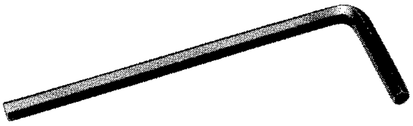
VFK0303 Camera Holder



VFK0304 Y/C Separator

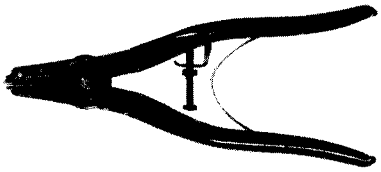


VFK0305 Hex. Wrench (0.71 mm)

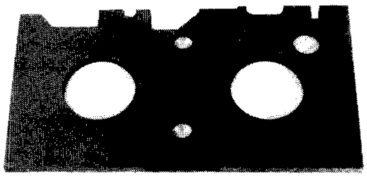


VFJ8125H3F VHS Alignment Tape

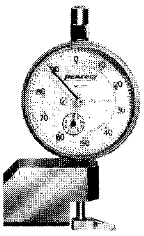
VFK0144 Retaining Ring Remover (3 mm)



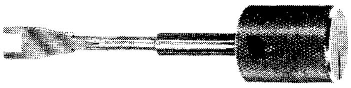
VFK0191 Post Adjustment Plate



VFK0190 Reel Table Height Jig



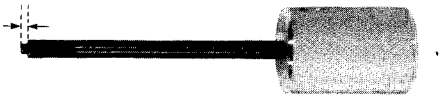
VFK0189 H-Position Adj. Fixture



VFK0137 Post Adjustment Screwdriver

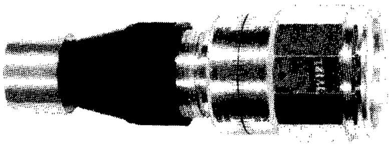
VFK0157 Fine Adjustment Screwdriver

Approx. 1.5 mm

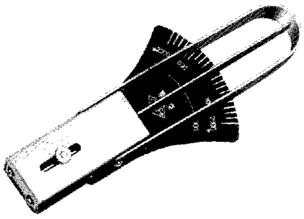


Grind the top portion approximately 2.5 mm.

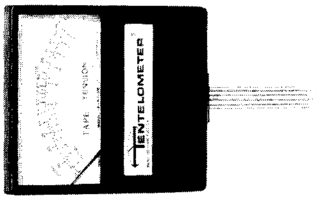
VFK0133 Dial Torque Gauge
VFK0134 Adaptor for VFK0133
VFK0180 (Plastic Clamper Only)



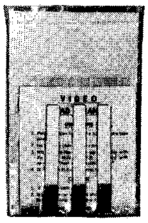
VFK66 Fan Type Tension Gauge



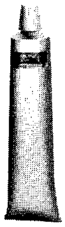
Back Tension Meter
(Tentelometer, Made in U.S.A.)



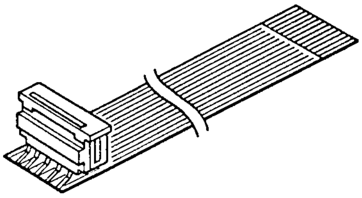
VFK27 Head Cleaing Stick



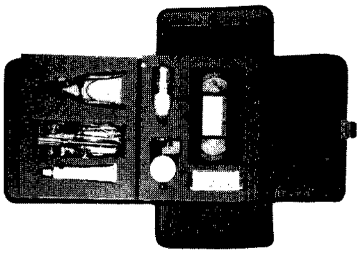
MOR265 Morlytone Grease



VFK0312 10 Pin Connection Cable



VFK0283 Service Alignment Tool Kit



2-4. ELECTRIC ADJUSTMENT PROCEDURES

2-4-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

TEST EQUIPMENT AND TOOL

The following equipment is required for adjustment of the CAMERA section of VKR6800.

TYPE	SPECIFICATION(MAX)
1. Oscelloscope	Dual Trace, 25MHz, 2mV/DIV Delay Sweep 10:1 Probe 1:1 Probe
2. Digital Voltmeter or VTVM	1000V
3. Frequency Counter	
4. Vector Scope	
5. Light Meter	
6. Tripod	
7. Colour Video Monitor	
8. Lighting	140 footcandles (1400lux) on the chart surface, 3200 degrees K.
9. Reflection Chart	Logarithmic gray scale chart (Part No.:YWV2310RB99) Colour Chip Chart (Part No.:YWV2100RB98) Ball Chart (Part No.:YWV2100RB03) ● White Card(Chart) Note:You can use the white paper for white card.
10. Camera Holder	(Part No.: VFK0303) This is used to fix the camera unit on a tripod.
11. 9 pin Connection Cable (Video-Camera)	(Part No.:VFK0302) This is used for connection between the camera unit and the video recorder unit.
2. Plastic Tip Driver	
13. High-Voltage Voltmeter	1500V 1000M ohm (or 1000M ohm Probe)

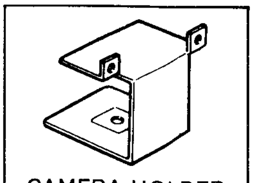


Fig.E1

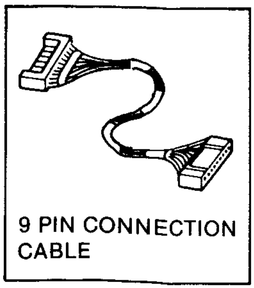


Fig.E2

PREPARATIONS

1. Remove the camera unit from VTR chassis (Refer to the DISASSEMBLY SECTION)
2. Set the camera unit on the tripod using the camera holder.
   Unscrew 2 screws (A).
   Attach the camera unit to the camera holder (VFK0303), and tighten the screw.
3. Connect the video recorder unit and camera unit through the 9 pin connection cable (VFK0302).

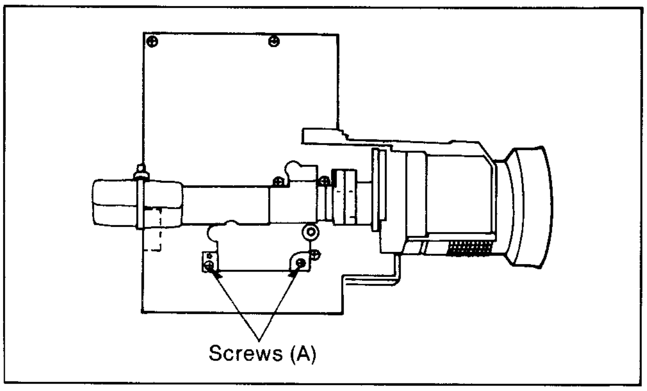


Fig.E3

Now supply the power to the camera unit from the Video recorder unit, and the Video signal from the colour camera is fed to the Video recorder unit.

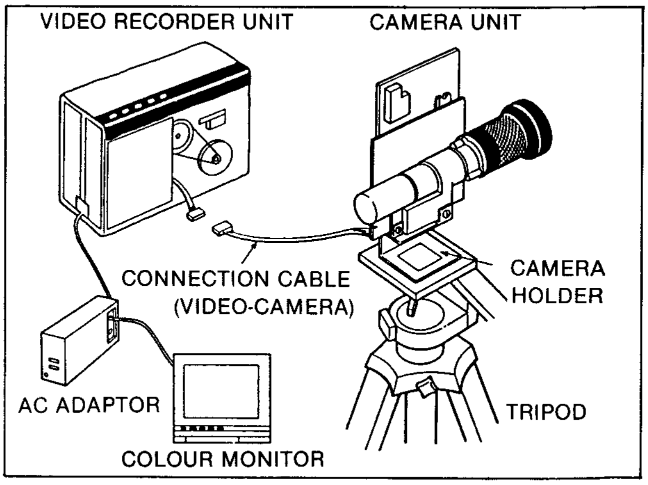


Fig.E4

Note:

1. Service work for the camera unit must be performed in dust free location to keep the lens dust free.
2. To achieve the best adjustment, warm up the camera for approximately 30 minutes before adjusting.
3. In the deflection circuit, the high voltage (example 1400V) is used. Do not touch to this high voltage area. (shown below)

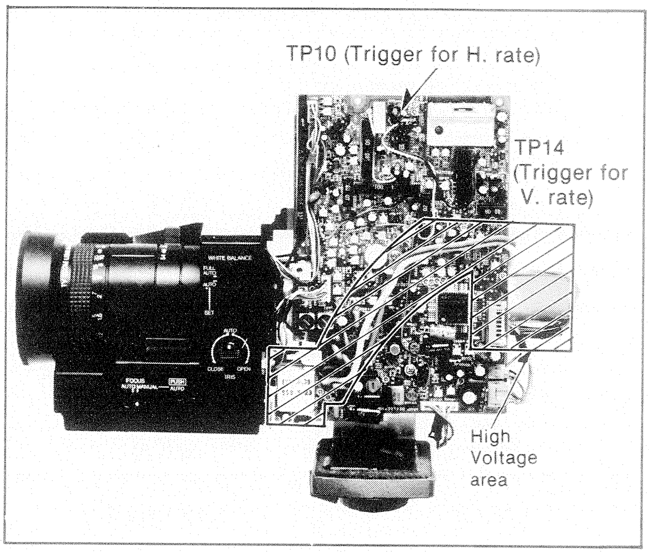

TP10 (Trigger for H. rate)
TP14 (Trigger for V. rate)
High Voltage area

Fig.E5

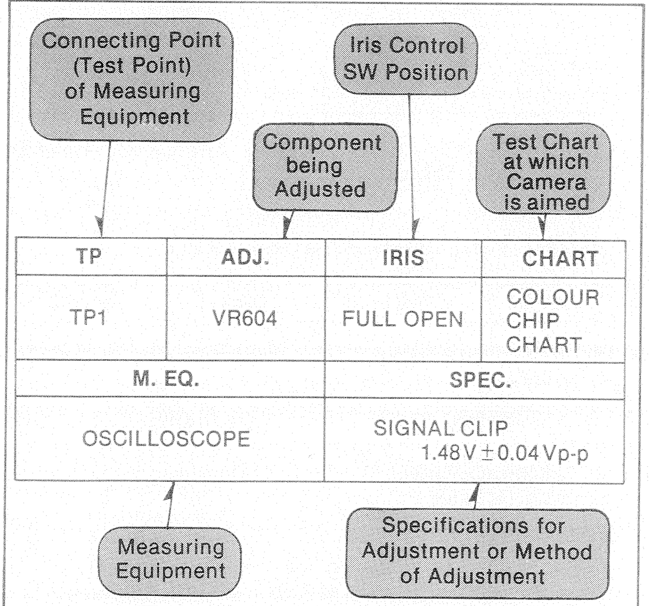
POSITION OF CONTROLS AND SWITCHES ON THE CAMERA

White Balance Switch---"AUTO" Position
Auto Focus-------------"NORMAL"Position
Iris Control-----------Center (Auto)

CAUTION

Do not set the White Balance during adjustment.

HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Iris Control SW Position
Component being Adjusted
Test Chart at which Camera is aimed
TP
ADJ.
IRIS
CHART
TP1
VR604
FULL OPEN
COLOUR CHIP CHART
M. EQ.
SPEC.
OSCILLOSCOPE
SIGNAL CLIP 1.48V±0.04Vp-p
Measuring Equipment
Specifications for Adjustment or Method of Adjustment

Note: If ☒ appears in any block, this means it is not used or not important.

Fig.E6

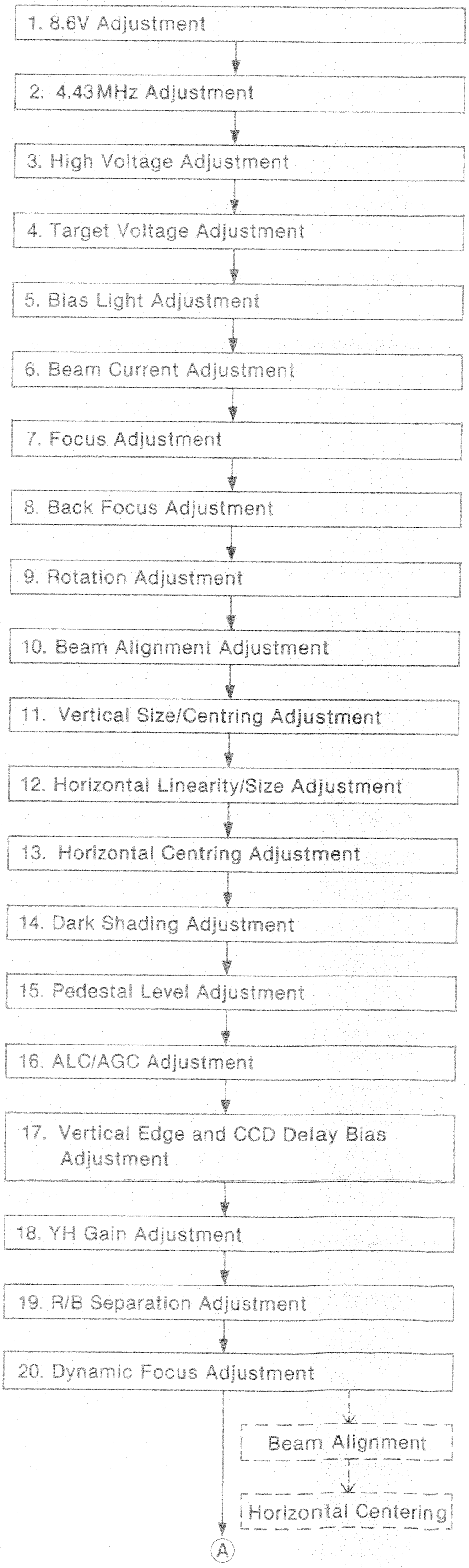
FOR TRIGGERING OF THE OSCILLOSCOPE

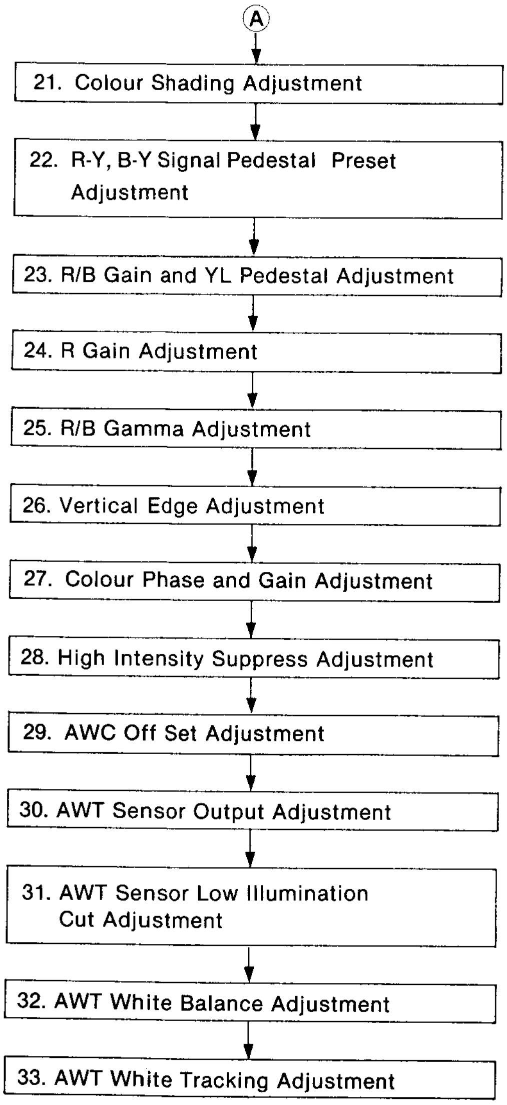
To trigger the scope, the following test points are supplied.

H rate:
TP10 (CP1 Signal)

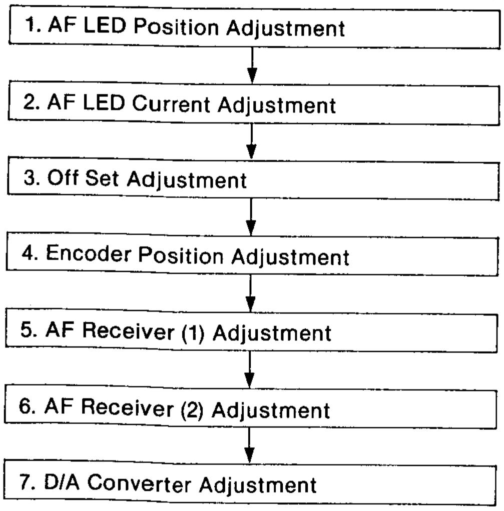
V rate:
TP14 (VP Signal)

CAMERA ADJUSTMENT FLOW CHART

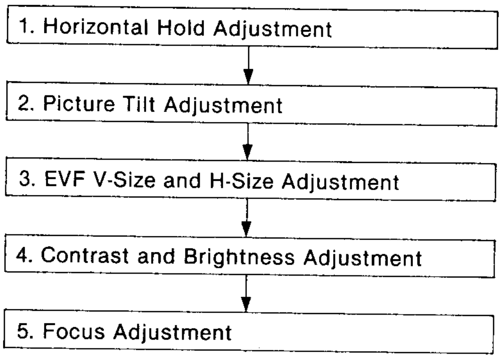

1. 8.6V Adjustment
2. 4.43MHz Adjustment
3. High Voltage Adjustment
4. Target Voltage Adjustment
5. Bias Light Adjustment
6. Beam Current Adjustment
7. Focus Adjustment
8. Back Focus Adjustment
9. Rotation Adjustment
10. Beam Alignment Adjustment
11. Vertical Size/Centring Adjustment
12. Horizontal Linearity/Size Adjustment
13. Horizontal Centring Adjustment
14. Dark Shading Adjustment
15. Pedestal Level Adjustment
16. ALC/AGC Adjustment
17. Vertical Edge and CCD Delay Bias Adjustment
18. YH Gain Adjustment
19. R/B Separation Adjustment
20. Dynamic Focus Adjustment
Beam Alignment
Horizontal Centering
Ⓐ


Ⓐ
21. Colour Shading Adjustment
22. R-Y, B-Y Signal Pedestal Preset Adjustment
23. R/B Gain and YL Pedestal Adjustment
24. R Gain Adjustment
25. R/B Gamma Adjustment
26. Vertical Edge Adjustment
27. Colour Phase and Gain Adjustment
28. High Intensity Suppress Adjustment
29. AWC Off Set Adjustment
30. AWT Sensor Output Adjustment
31. AWT Sensor Low Illumination Cut Adjustment
32. AWT White Balance Adjustment
33. AWT White Tracking Adjustment

AUTO FOCUS ADJUSTMENT FLOW CHART


1. AF LED Position Adjustment
2. AF LED Current Adjustment
3. Off Set Adjustment
4. Encoder Position Adjustment
5. AF Receiver (1) Adjustment
6. AF Receiver (2) Adjustment
7. D/A Converter Adjustment

EVF ADJUSTMENT FLOW CHART


1. Horizontal Hold Adjustment
2. Picture Tilt Adjustment
3. EVF V-Size and H-Size Adjustment
4. Contrast and Brightness Adjustment
5. Focus Adjustment

CAMERA ADJUSTMENT PROCEDURES

1. 8.6V ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP15	VR601		
M. EQ.		SPEC.	
D.V.M.		8.6V±50mV	

Note:
This adjustment should always be performed before any other items because this voltage will affect overall camera circuit.

2. 4.43MHz ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP8	C442		
M. EQ.		SPEC.	
FREQUENCY COUNTER		4.433618MHz±40Hz	

1. Turn the C442 so that frequency become 4.433618MHz+-40Hz

3. HIGH VOLTAGE ADJUSTMENT

TP	ADJ.	IRIS	CHART
G6 TERMINAL	VR609		
M. EQ.		SPEC.	
HIGH-VOLTAGE VOLTMETER		1400V±30V	

A high voltage volmeter is necessary to measure the potential of G6 terminal of pick-up tube. Do not use low impedance meter. (or low impedance probe)

(HIGH VOLTAGE VOLTMETER)
Range: More than 2000V
Impedance: 1000 M ohms (or 1000M ohms probe for high voltage)

Do not perform this adjustment (VR609) without above equipment.

4. TARGET VOLTAGE ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP12	VR611		
M. EQ.		SPEC.	
D.V.M.		Esj. +2V±0.5V	

(1).Connect the digital voltmeter to TP12.
(2).Adjust the target voltage control (VR611) so that the voltage is equal to the Esj value stamped on the Newvicon tube plus 2V+-0.5V.
Esj value is also written on seal of coil as shown in Fig E7(B).

Note:
If pick-up tube have replaced before, Esj value which is stamped on pick-up tube is defferent from seal of coil's one.
When you replace the pick-up tube, please correct the Esj value which is written on seal of coil so that written on seal of coil's Esj match the stamped on pick-up tube's one.

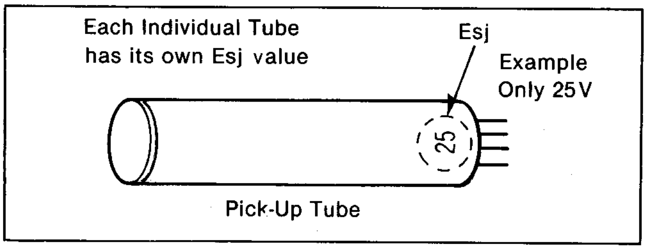

Each Individual Tube has its own Esj value
Esj
Example Only 25V
25
Pick-Up Tube

Fig.E7(A)

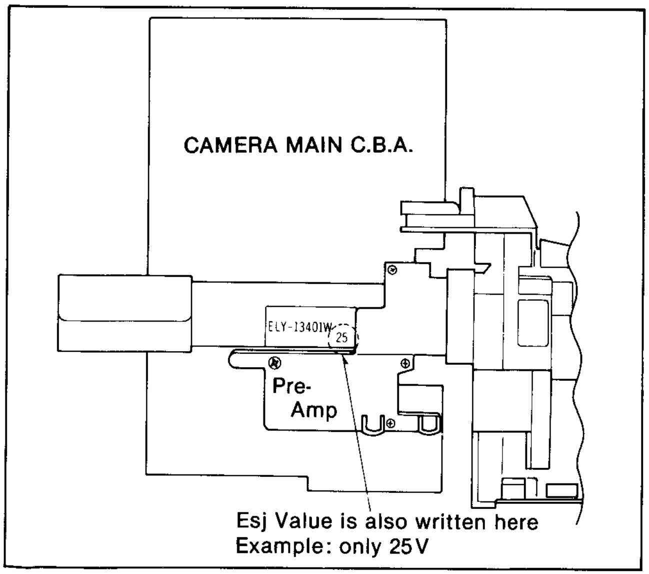

CAMERA MAIN C.B.A.
ELY-13401W
25
Pre-Amp
Esj Value is also written here
Example: only 25V

Fig.E7(B)

5. BIAS LIGHT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR612	CLOSED	
M. EQ.		SPEC.	
OSCILLOSCOPE		24mV±8mV	

(1).Turn the iris control fully counter clockwise (CLOSE position).
(2).Connect the scope to TP1 (V.rate).
(3).Adjust the bias light control (VR612) so that the waveform level is 24mV+-8mV.

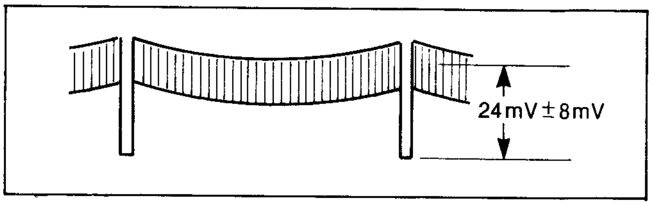


Fig.E8

Note:
1. If there is dark shading (bias light shading), adjust the level at the centre of the waveform.
2. Use 1:1 probe for easier adjustment.

6. BEAM CURRENT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR604	FULLY OPEN	WHITE CARD
M. EQ.		SPEC.	
OSCILLOSCOPE		SIGNAL CLIP 1.48V±0.04Vp-p	

(1).Connect the scope to TP1 (H rate).
(2).Aim the camera at the small light source (for example: studio lights) in order to saturate the beam, and focus at the TELE side
(3).Turn the iris control fully clockwise (OPEN position).
(4).Adjust the beam control (VR604) so that the signal clippimg occurs at 1.48V +-0.04Vp-p.

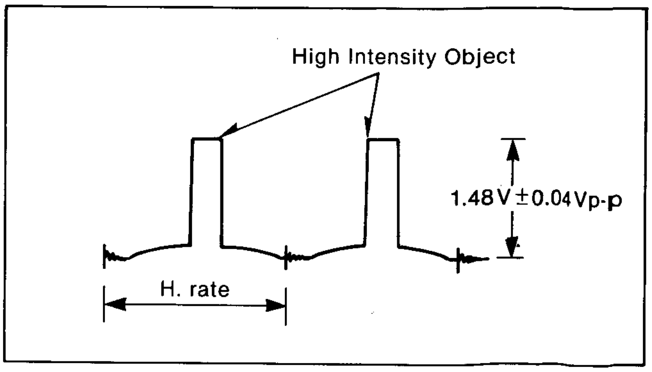

High Intensity Object
1.48V±0.04Vp-p
H. rate

Fig.E9

Note:
1. If the signal is less than 1.48Vp-p, use a more intense light source.
2. Be careful not to damage the pick-up tube with too strong light.

7. FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4	VR610	NORMAL	WHITE CARD

M. EQ.	SPEC.
OSCILLOSCOPE	MAXIMUM SIGNAL LEVEL

(1).Aim the camera at the white card.
(2).Connect the scope to TP4 (H. rate).
(3).Adjust the focus control (VR610) so that the carrier (3.9MHz) on the centre portion of the pre-video signal becomes maximum as shown below.
(4).Make sure that the green colour is also minimized at on the centre portion of monitor screen.

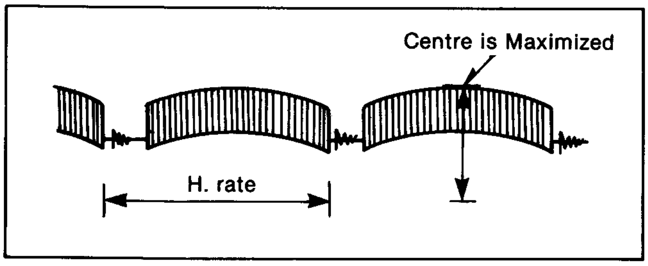


Fig.E10

8. BACK FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
	LENS FOCUS	AUTO	OBJECT

M. EQ.	SPEC.
TV MONITOR	FOCUS TRACKS THROUGHOUT THE ZOOM RANGE.

(1).Aim the camera at the object further than 33 feet (10m) from the camera.
(2).Zoom all the way in (Close up/telephoto) and adjust the focus by turning the lens focus.
(3).Zoom all the way out (Wide angle) and adjust the focus by turning the backfocus adjustment ring.
(4).Zoom in again and adjust the focus by turning the lens focus.
(5).Zoom out again and adjust the focus by turning the backfocus adjustment ring.
(6).Repeat this procedure zoom in, focus, zoom out and adjust until the best focus is obtained over the entire zoom range.

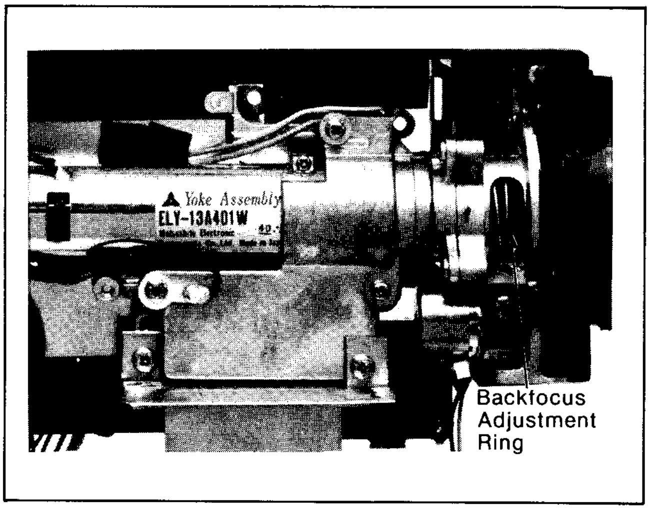


Fig.E11

9. ROTATION ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	TUBE	NORMAL	WHITE CARD

M. EQ.	SPEC.
OSCILLOSCOPE	MINIMUM BEAT

(1).Remove the shield cover for pick-up tube.
(2).Loosen the pick-up tube holding screw.
(3).Aim the camera at the white card.
(4).Connect the scope to TP 1 (V. rate)
(5).Adjust the focus control (VR610) formaximum signal level.
(6).Delay the sweep of the centre portion of the vertical signal waveform and observe a few horizontal lines.
(7).Rotate the pick-up tube by means of the tube socket (CAUTION 1.4KV) so that the beat during the horizontal period is minimum.

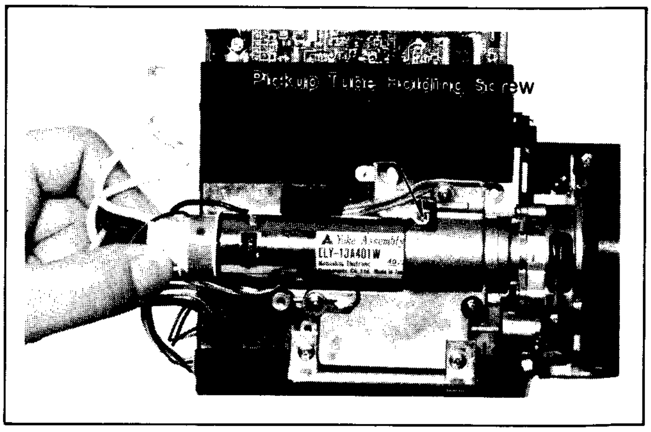


Fig.E12

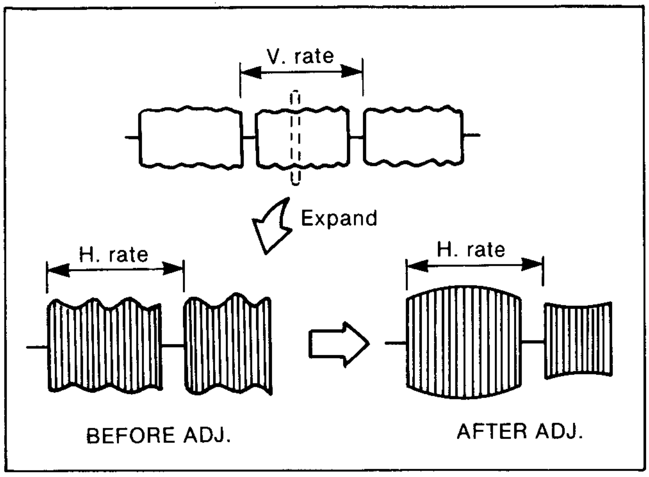


Fig.E13

(8).Carefully tighten the pick-up tube holding screw.

10. BEAM ALIGNMENT ADJUSTMENT

TP	ADJ.	IRIS	CHART
	ALIGNMENT MAGNET	NORMAL	WHITE CARD
M. EQ.		**SPEC.**	
TV MONITOR		MAXIMUM RED	

(1).Aim the camera at the white card.
(2).Set the red gain control (VR309) so that a red or magenta colour appears on the monitor screen.
(3).Remove the lock paint from the alignment magnets.
(4).Then observe the colour monitor, and rotate the alignment magnets for minimum green tint in the centre and maximum magenta (red) colour covers the whole screen of the monitor .
(5).Lock the alignment magnets using the lock paint.
(6).Adjust the red gain control (VR309) after this adjustment.

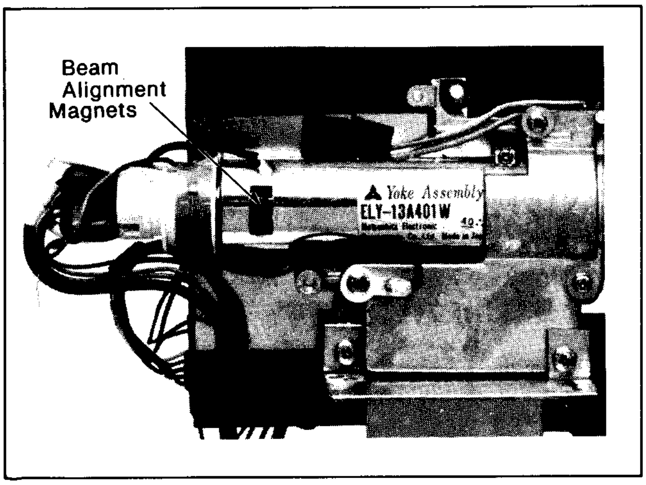


Fig.E14

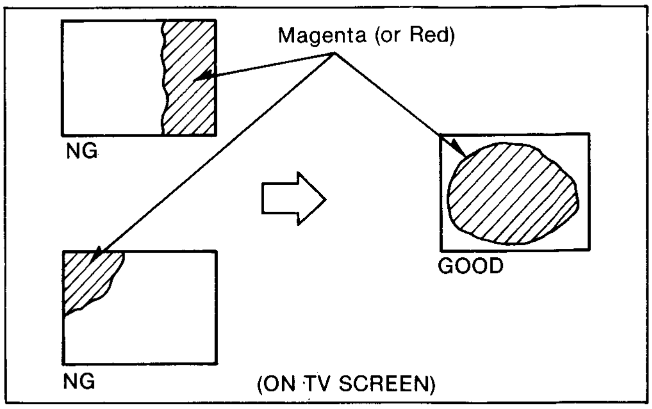


Fig.E15

Note:
Complete elimination of green corners or edges might not be achieved at this point, because dynamic focus and shading compensation remain to be set. It might be necessary to trim up the beam alignment adjustment after the dynamic focus and color shading adjustments have been completed.

11. VERTICAL SIZE/CENTRING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR603	NORMAL	WHITE CARD
	VR602		SMALL OBJECT
M. EQ.		**SPEC.**	
OSCILLOSCOPE		ONE BEAT PER ENVELOPE	
TV MONITOR		OBJECT DOES NOT MOVE VERTICALY	

(1).Aim the camera at the white card.
(2).Connect the scope to TP1 (V rate).
(3).Adjust the vertical size control (VR603) so that the beat in the signal is minimized.
After adjustment, there should be a maximum of one cycle per envelope.
(4).Aim the camera at a small object so that the object is in the centre of the monitor screen.
(5).Adjust the vertical centreing control (VR602) so that the small object does not shift vertically when the lens is zoomed in and out a few times.

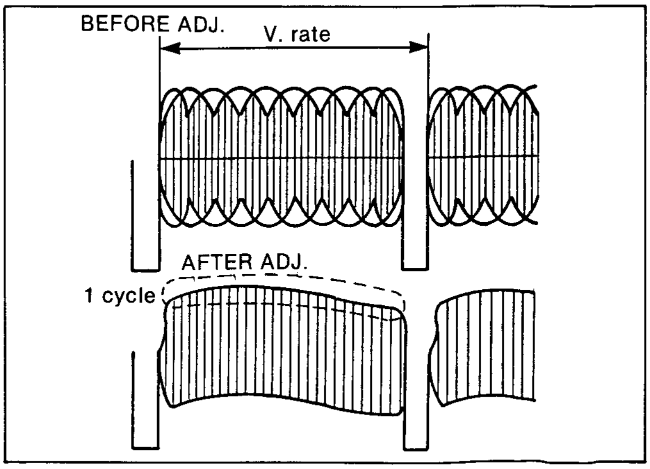


Fig.E16

12. HORIZONTAL LINEARITY/SIZE ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP6	VR605 VR607 VR608	NORMAL	WHITE CARD
M. EQ.		SPEC.	
OSCILLOSCOPE		LEVEL IS MINIMIZED. WAVEFORM IS FLAT.	

(1).Aim the camera at the white card.
(2).Connect the oscilloscope to TP1 (H rate).
(3).Adjust the horizontal size control (VR605) so that the carrier (3.9MHz) at the centre of the waveform portion is minimized.
(4).Adjust the horizontal linearity 1 (VR607) and 2 (VR608) so that the waveform is flat.

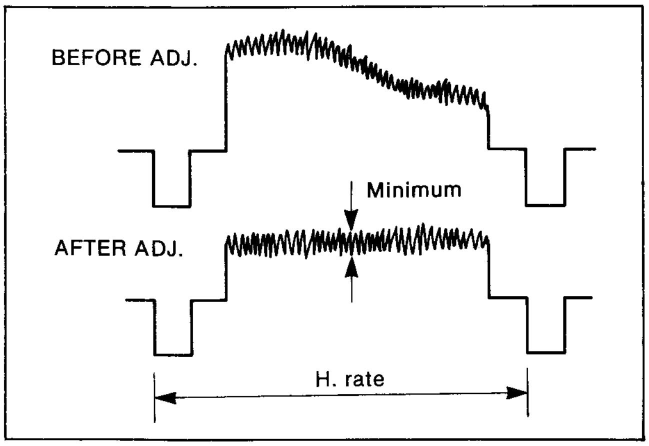


Fig.E17

13. HORIZONTAL CENTRING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1 TP10	VR606	NORMAL	WHITE CARD
M. EQ.		SPEC.	
OSCILLOSCOPE		1.7µsec.~2.0µsec.	

(1).Aim the camera at the white card.
(2).Connect the CH1 of the scope to TP1 and CH2 to TP10 (CP1 signal).
(3).Use the CP1 signal for scope trigger and observe the horizontal blanking interval of the signal using the delay mode of the scope.
(4).Adjust the horizontal centreing control (VR606), so that the time between the trailing edge of the video signal and the raising edge of the clump pulse 1 signal is 1.7 usec~2.0 usec.

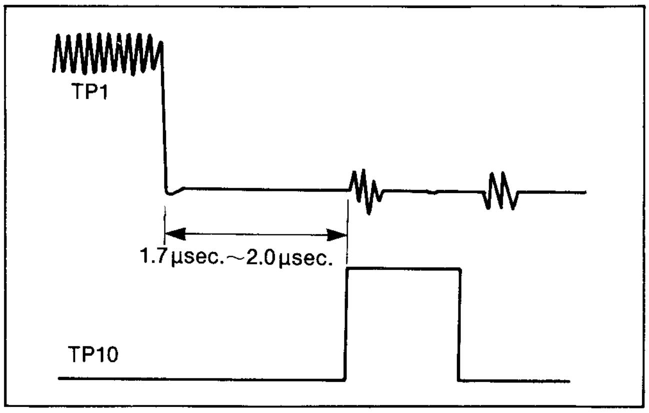


Fig.E18

Note:
1. If the double trace occurs at the end of a horizontal line, reconfirm the pick-up turning adjustment (Item 9).
2. If the rotation adjustment is correct, adjust VR606 Item13-(4).

14. DARK SHADING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP2	VR411 (H) VR412 (H) VR202 (V) VR203 (V)	CLOSED	
M. EQ.		SPEC.	
OSCILLOSCOPE		WAVEFORM IS FLAT.	

(1).Turn the iris control fully counter clockwise. (Close Position)
(2).Connect the oscilloscope to TP2 (H.rate)
(3).Adjust the dark shading controls (VR411 and VR412) so that the waveform is flat.

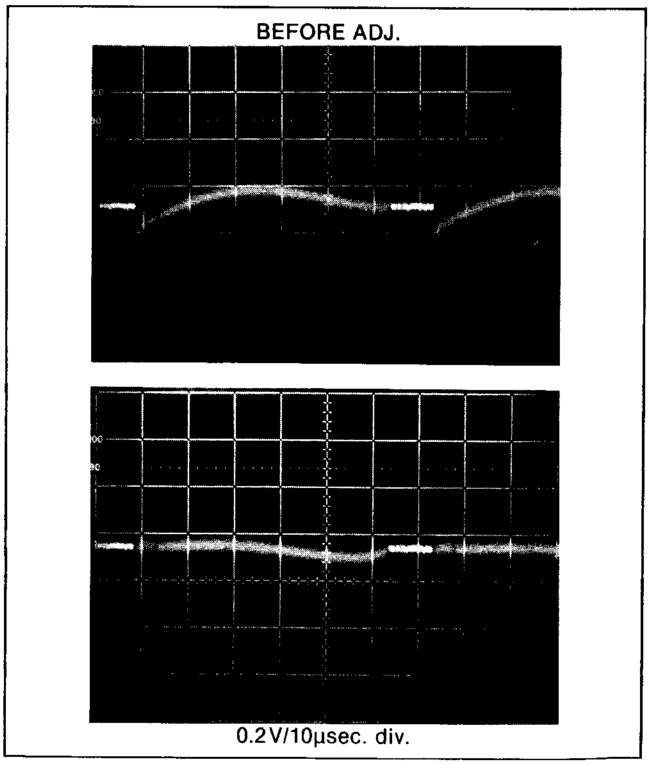


Fig.E19

(4).Trigger the scope at V. rate.
(5).Adjust the dark shading controls (VR202 and VR203) so that the waveform is flat.

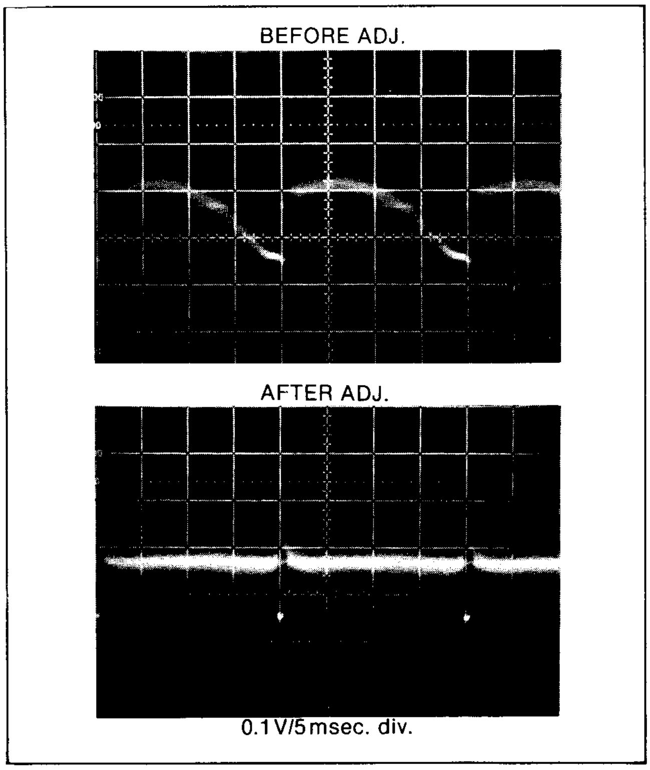


Fig.E20

15. PEDESTAL LEVEL ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP6	VR201	CLOSED	╳
M. EQ.		SPEC.	
OSCILLOSCOPE		19mV~20mV	

(1).Turn the iris control fully counter clockwise (CLOSE Position)
(2).Connect the scope to TP6 (H. rate).
(3).Adjust the dark control (VR201) so that signal level is 19mV~20mV from BLK level to centre of peak portion.

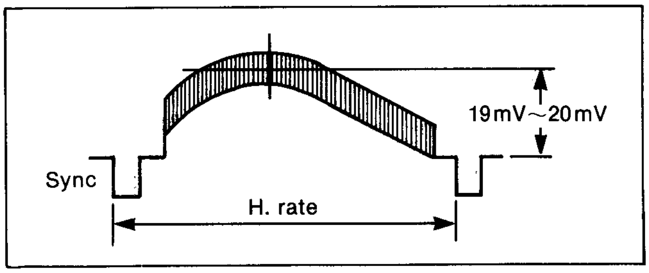


Fig.E21

(4).Confirm that the pedestal level does not change by turning the iris control.

16. ALC/AGC ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR204	NORMAL	GRAY SCALE
TP2	VR205		
M. EQ.		SPEC.	
OSCILLOSCOPE		0.5V±0.02Vp-p	
		0.5V±0.02Vp-p	

(1).Aim the camera at the logarithmic gray scale chart and set iris control to "Auto".
(2).Connect the scope to TP1 (H. rate).
(3).Then to release the carrier signal. (by turning the focus control VR610).
(4).Adjust the ALC control (VR204) so that the signal level is 0.5V+-0.02Vp-p.

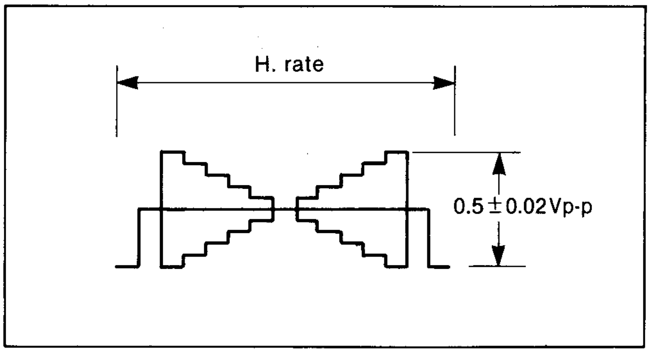


Fig.E22

(5).Connect the scope to TP2 (H. rate).
(6).Adjust the AGC control (VR205) so that the signal level is 0.5V +- 0.02Vp-p.
(7).After adjustment, readjust the focus control, VR610 (Item 7).

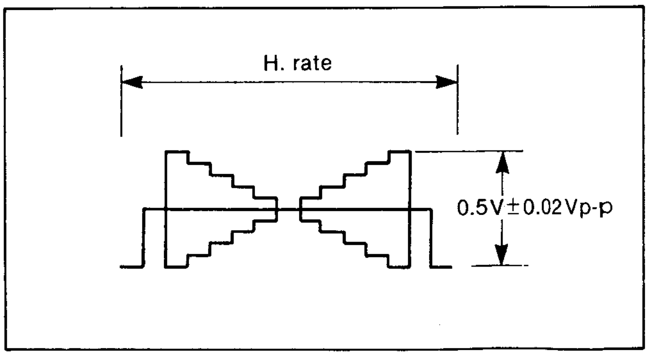


Fig.E23

Note:
This adjustment mest be performed in the condition of 1400lux illumination.

17. VERTICAL EDGE AND CCD DELAY BIAS ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP3	VR405 VR406	NORMAL	GRAY SCALE

M. EQ.	SPEC.
OSCILLOSCOPE	CANCEL THE VIDEO SIGNAL.

(1).Aim the camera at the logarithmic gray scale chart.
(2).Connect the scope to TP3 (H. rate).
(3).Adjust the vertical edge balance control (VR405) and the CCD bias control (VR406) to cancel the video signal.

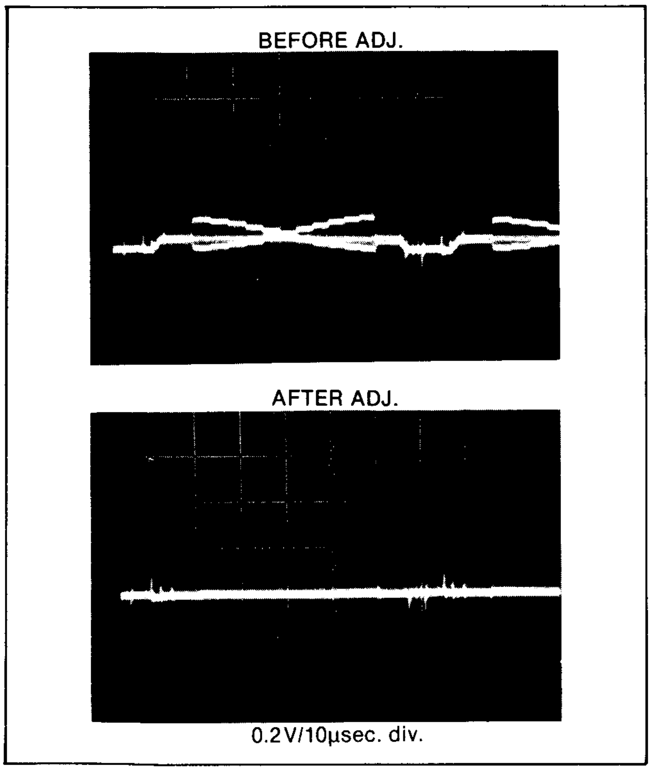

BEFORE ADJ.
AFTER ADJ.
0.2V/10μsec. div.

Fig.E24

18. YH GAIN ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP6	VR304	NORMAL	GRAY SCALE

M. EQ.	SPEC.
OSCILLOSCOPE	1.75V±0.05Vp-p

(1).Aim the comera at the logarithmic gray scale chart.
(2).Connect the scope to TP6 (H. rate).
(3).Adjust the YH gain control (VR304) so that the signal level is 1.75V+-0.05Vp-p

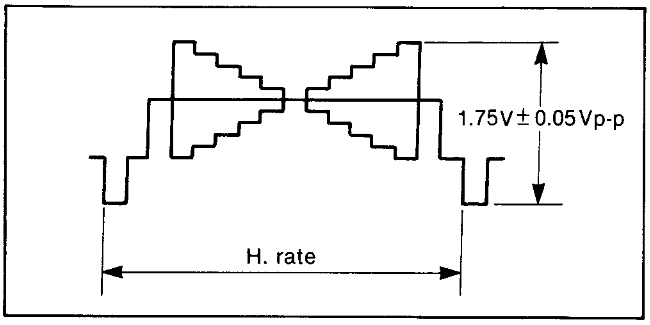

1.75V±0.05Vp-p
H. rate

Fig.E25

19. R/B SEPARATION ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP25	VR303 C305	NORMAL	GRAY SCALE

M. EQ.	SPEC.
OSCILLOSCOPE	MINIMUM FLICKER

(1).Aim the camera at the logarithmic gray scale.
(2).Connect the scope to TP25 (H. rate).
(3).Alternately adjust the separation controls (VR303 and C305) at minimize the flicker.

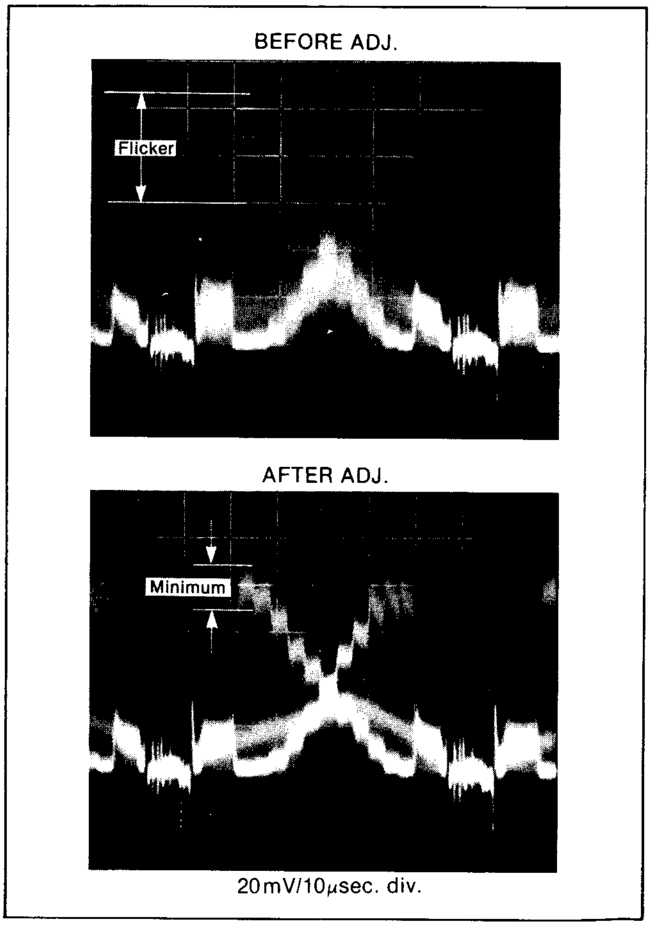

BEFORE ADJ.
Flicker
AFTER ADJ.
Minimum
20mV/10μsec. div.

Fig.E26

20. DYNAMIC FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4	VR409 (H) VR410 (H) VR408 (V) VR407 (V)	NORMAL	WHITE CARD

M. EQ.	SPEC.
OSCILLOSCOPE	FLAT WAVEFORM

(1).Aim the camera at the white card.
(2).Connect the scope to TP4. (H.rate)
(3).Adjust the dynamic focus controls VR409 and VR410 so that the waveform is flat as possible.

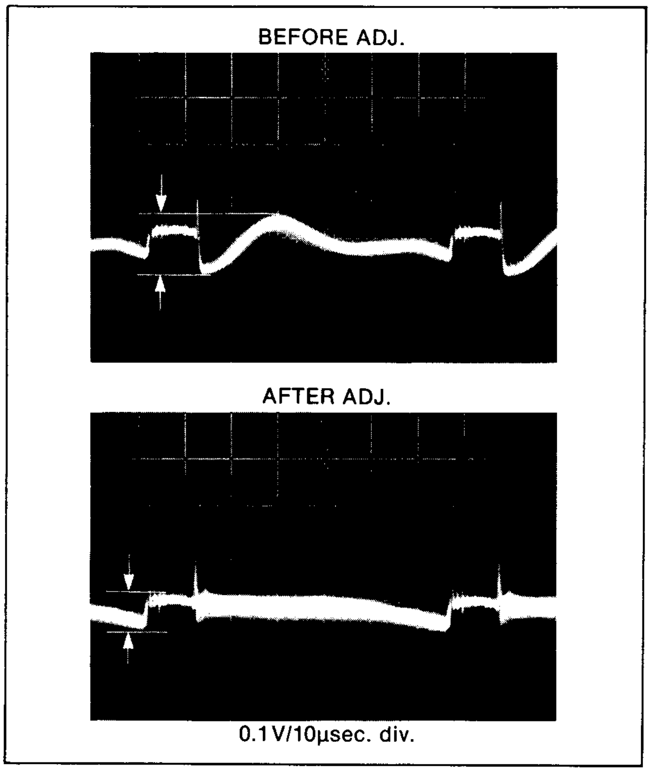


Fig.E27

(4).Change the scope trigger to V. rate.
(5).Adjust the dynamic focus controls for V (VR408 and VR407) so that the waveform is flat as possible.
(6).Return the scope trigger to H. rate.
(7).Readjust VR409 and VR410 so that the waveform is kept be flat when the focus control (VR610) is turned.
(8).Change the scope trigger to V. rate again.
(9).Readjust VR408 and VR407 by same method with H. rate.
(10).Readjust the focus control (VR610). Refer to item 7.

21. COLOUR SHADING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4 TP5	VR310~313 VR317~320	NORMAL	WHITE CARD

M. EQ.	SPEC.
OSCILLOSCOPE	FLAT WAVEFORM

(1).Aim the camera at the white card.
(2).Connect the scope to TP4 and observe the R-Y signal at H. rate
(3).Adjust the colour shading controls for H.(VR312 and VR313) so that the waveform is flat as possible.

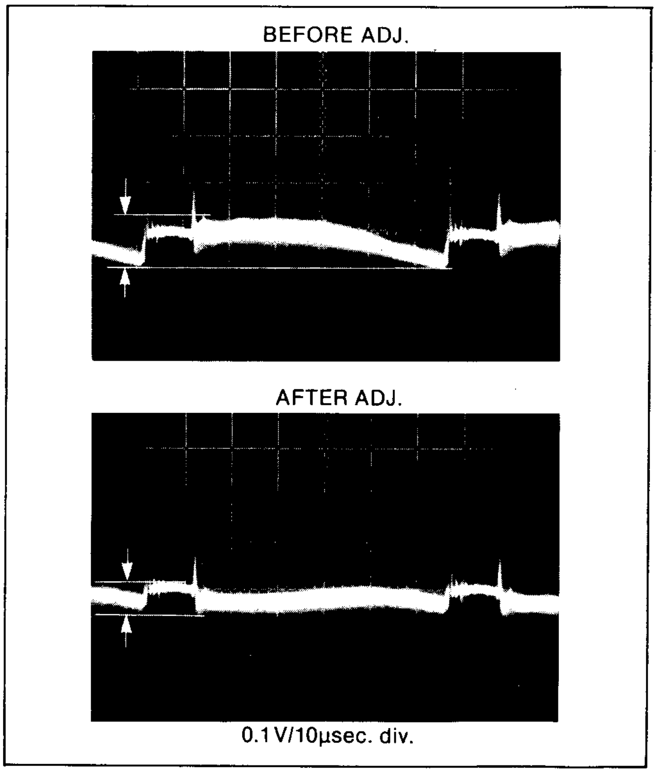
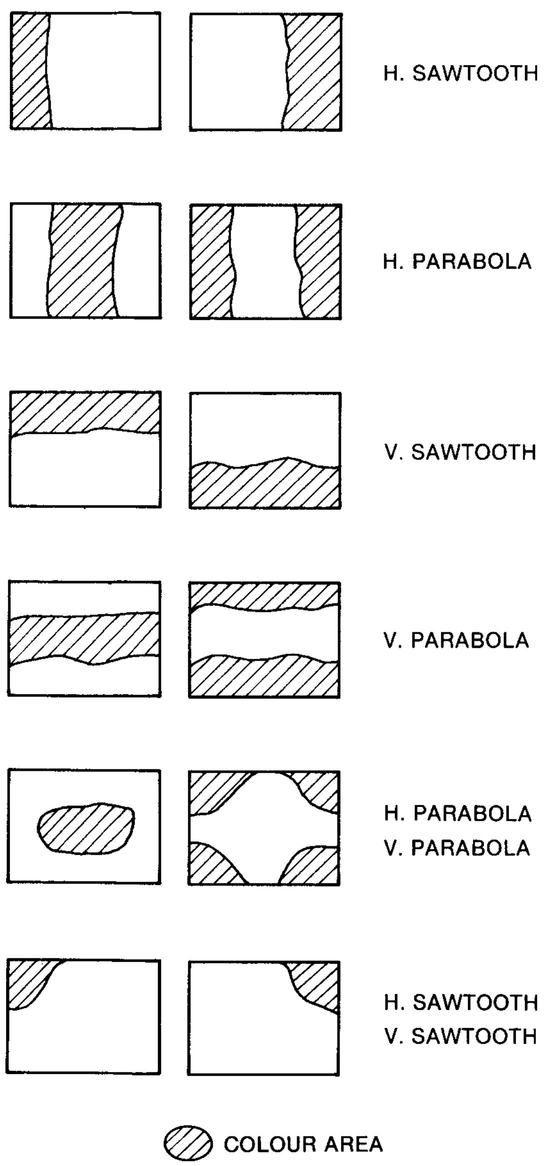


Fig.E28

(4).Trigger the scope at V. rate.
(5).Adjust the colour shading controls for V (VR310 and VR311) so that the waveform is flat as possible.
(6).Change the scope to TP5 to observe the B-Y signal.
(7).Alternately adjust the colour shading controls (VR319 and VR320 in the H.rate, VR317 and VR318 in the V.rate) so that waveform is flat as possible.

Note 1:
To adjust easily, observe the colour monitor and if shading occurs as shown below, adjust following controls.


H. SAWTOOTH
H. PARABOLA
V. SAWTOOTH
V. PARABOLA
H. PARABOLA
V. PARABOLA
H. SAWTOOTH
V. SAWTOOTH
COLOUR AREA

		PARABOLA	SAWTOOTH
R-Y	H	VR312	VR313
	V	VR310	VR311
B-Y	H	VR319	VR320
	V	VR317	VR318

Fig.E29

22. R-Y, B-Y SIGNAL PEDESTAL PRESET ADJUSTMENT

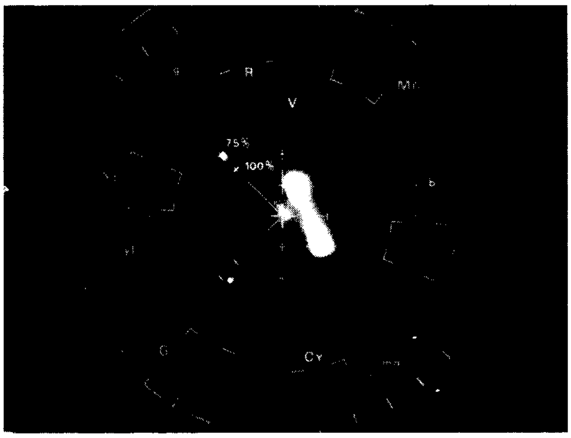
A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR322 VR323	CLOSED	
M. EQ.		**SPEC.**	
VECTOR SCOPE		VECTORS ARE CENTRE ON VECTORSCOPE DISPLAY	

(1).Turn the iris control fully counter clockwise. (CLOSE side)
(2).Supply the video signal taken from the VCR section to the vector scope.
(3).Adjust the pedestal controls (VR322 and VR323) so that the colour vectors centre on the vector scope.

Note:
The vector scope has to be terminated, by 75 ohm during adjustment.

BEFORE ADJ.



AFTER ADJ.

Fig.E30

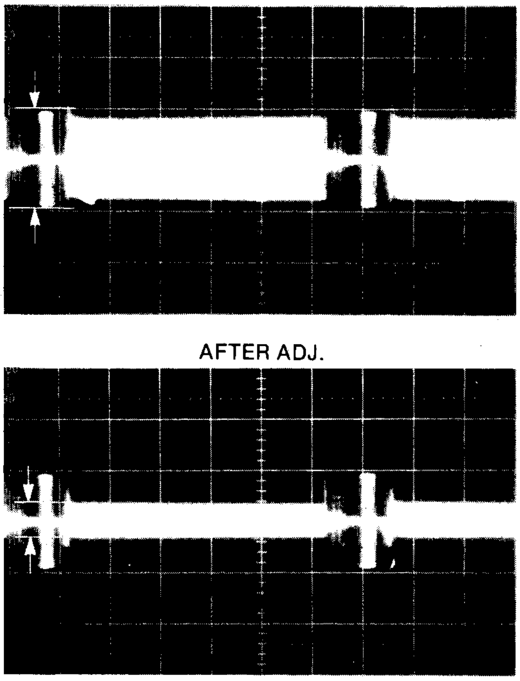
B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP9	VR322 VR323	CLOSED	
M. EQ.		**SPEC.**	
OSCILLOSCOPE		MINIMUM WAVEFORM	

(1).Turn the iris control fully counter clockwise. (CLOSE Position)
(2).Connect the CH1 of the scope to TP9 (H.rate).
(3).Adjust the pedestal controls (VR322 and VR323) so that the waveform is minimized.

BEFORE ADJ.

AFTER ADJ.



20mV/10µsec. div.

Fig.E31

23. R/B GAIN AND YL PEDESTAL ADJUSTMENT

A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUT	VR302 VR321	NORMAL	GRAY SCALE
M. EQ.		**SPEC.**	
VECTOR SCOPE		VECTOR ARE CENTRE ON VECTORSCOPE DISPLAY	

(1).Aim the camera at a logarithmic gray scale chart.
(2).Supply the video output to the vector scope.
(3).Adjust the R/B gain control (VR302) and the YL pedestal control (VR321) so that the vectors centre on the vector scope as possible.

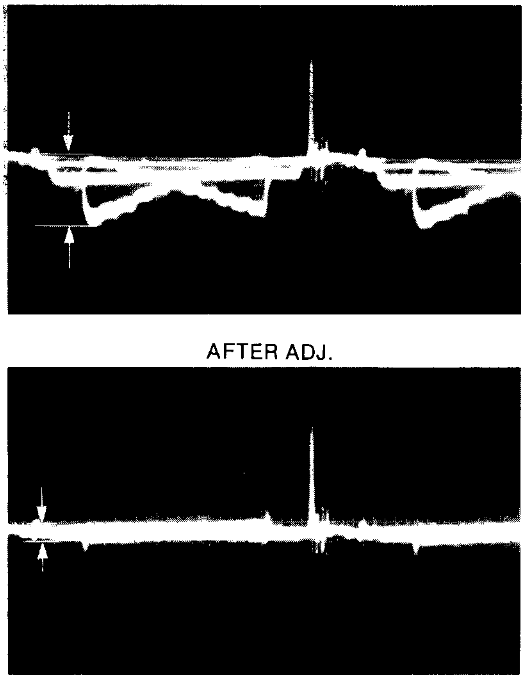
B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP5	VR302	NORMAL	GRAY SCALE
TP4	VR321		
M. EQ.		**SPEC.**	
OSCILLOSCOPE		MINIMUM WAVEFORM (REFER TO FIG. E32)	

(1).Aim the camera at a logarithmic gray scale chart.
(2).Connect the CH1 of the scope to TP4.
(3).Adjust the YL pedestal control (VR321) so that the waveform is as shown below.
(4).Connect the CH1 of the scope to TP5.
(5).Adjust the R/B gain control(VR302) so that the waveform is same as item 3.

BEFORE ADJ.

AFTER ADJ.



0.1V/10µsec. div.

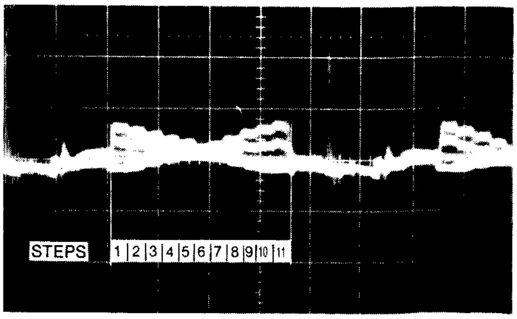
Fig.E32

24. R GAIN ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4	VR309	NORMAL	GRAY SCALE
M. EQ.		**SPEC.**	
OSCILLOSCOPE		CENTRE OF WAVEFORM IS BLK LEVEL.	

(1).Aim the camera at at the logarithmic gray scale chart.
(2).Connect the scope to TP4 (H. rate).
(3).Adjust the R gain control (VR309) so that the step wave at the centre area of waveform (4th~6th step) is BLK level as shown below.

BEFORE ADJ.



10mV/10µsec. div.

Fig.E33(A)

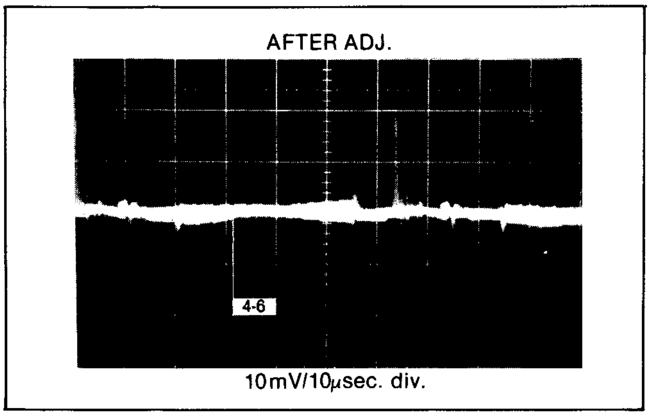


Fig.E33(B)

25. R/B GAMMA ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4 TP5	VR306~308 VR314~316	NORMAL	GRAY SCALE
M. EQ.		SPEC.	
OSCILLOSCOPE		WAVEFORM IS MINIMIZED.	

(1).Aim the camera at a logarithmic gray scale chart.
(2).Connect the scope to TP4 (H. rate).
(3).Adjust the R gamma 1 (VR307) so that the 1st~4th step is flat as shown below.
(4).Adjust the R gamma 2 (VR308) so that the 7th~8th step is flat.

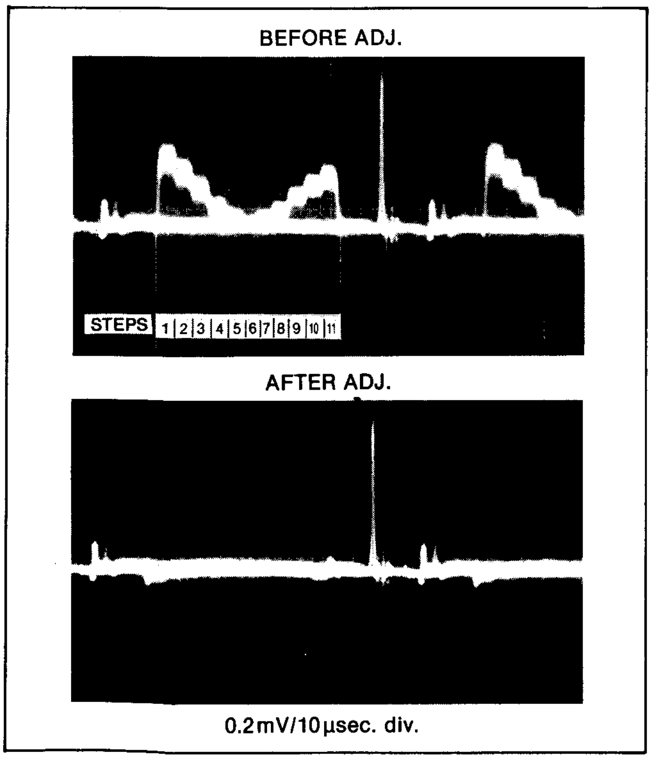


Fig.E34

(5).Adjust the R gamma 3 (VR306) so that the 9th-11th step is flat.
(6).Connect the scope to TP5.
(7).Adjust B gamma controls (VR314~VR316) by same method with the R gamma adjustment.

VR315 1st~4th step
VR314 7th~8th step
VR316 9th~11th step

Note:
After adjustment of these controls, readjust the R/B gain (VR302) and YL pedestal control (VR321) again.
Refer to the item 23.

26. VERTICAL EDGE ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR301	NORMAL	GRAY SCALE
M. EQ.		SPEC.	
TV MONITOR		COLOUR ERROR IS ELIMINATED.	

(1).Aim the camera at the logarithmic gray scale chart.
(2).Observe the picture on the colour monitor and adjust the vertical edge gain control (VR301) until the colour fringing on the upper and lower edge of the logarithmic gray scale is eliminated.

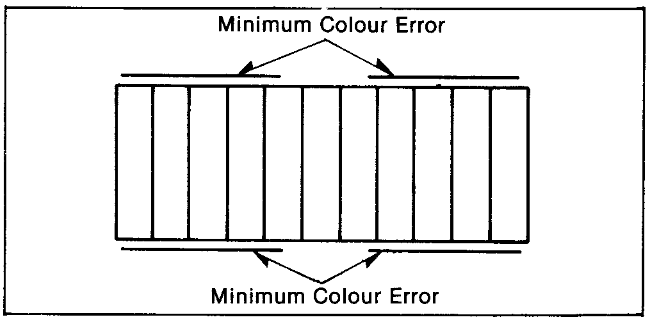


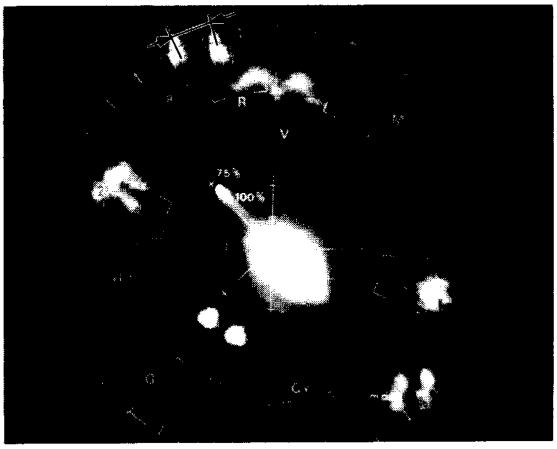
Fig.E35

27. COLOUR PHASE AND GAIN ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR414 VR413 VR415 VR403	NORMAL	COLOUR CHART
M. EQ.		SPEC.	
VECTOR SCOPE		REFER TO FIG. E36 (A)(B)	

(1).Aim the camera at the colour chart.
(2).Supply the video signal to the vector scope.
(3).Set the vector scope to NTSC mode.
(4).Adjust the burst phase control (VR415) so that the two red vectors becomes one as shown in Fig.E36(A).
(5).Adjust the colour phase controls (VR413, VR414 and VR403) so that the vector of each colour is shown in Fig.E36(B).

BEFORE ADJ.



AFTER ADJ.

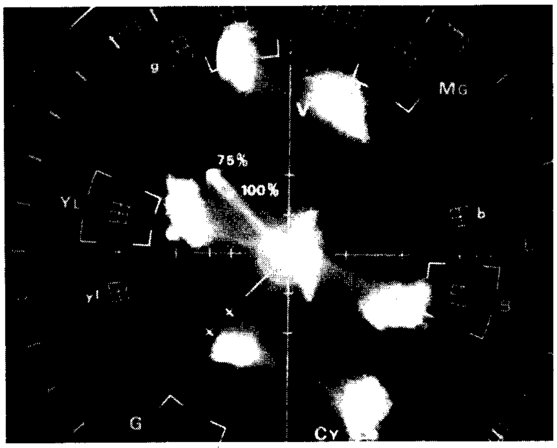


Fig.E36(A)

(6).Adjust the colour gain control (VR401) so that the red vector is 190% comparing with the burst signal on the vector scope.

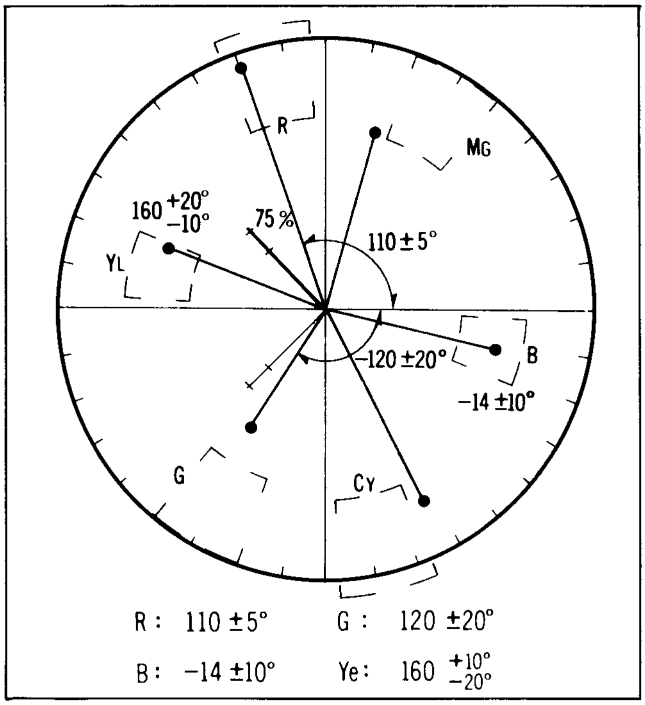


Fig. E36(B)

28. HIGH INTENSITY SUPPRESS ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR404	800mV~1V AT TP1	GRAY SCALE
M. EQ.		**SPEC.**	
OSCILLOSCOPE		GREEN IS ELIMINATED	

(1).Aim the camera at a logarithmic gray scale chart.
(2).Connect the scope to TP1 (V.rate).
(3).Adjust the iris control so that the waveform level is 800mV~1V.
(4).Observe the picture on the monitor and adjust the high intensity suppress control (VR404) so that the green coloured portion is eliminated.

29. AWC OFF SET ADJUSTMENT

A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR901 VR902	NORMAL	GRAY SCALE
M. EQ.		**SPEC.**	
VECTOR SCOPE		DURING AWC PUSH VECTORS COLLECT TO CENTRE.	

(1).Aim the camera at the logarithmic gray scale chart.
(2).Supply the video signal from VCR section to the vector scope.
(3). Keep to press the AWC SW on
(4).Adjust the AWC offset controls (VR901 and VR902) so that the colour signal vectors centre on the vector scope.

B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP9	VR901 VR902	NORMAL	GRAY SCALE
M. EQ.		**SPEC.**	
OSCILLOSCOPE		MINIMUM WAVEFORM	

(1).Aim the camera at the logarithmic gray scale chart.
(2).Connect the scope to TP9(H.rate).
(3).Keep to press the AWC SW on.
(4).Adjust the AWC offset controls (VR901 and VR902) so that the colour signal waveform is minimized.

30. AWT SENSOR OUTPUT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP11	VR502	AUTO	GRAY SCALE
TP11 (HOT) TP21 (GND)			
M. EQ.		SPEC.	
D.V.M		1.7V	
		20mV±5mV	

(1).Set the white balance select switch to FULL AUTO position.
(2).Set the Illumination on surface of the AWT sensor to 180Lx~700Lx (colour temperature is 3200 degrees K)
(3).Connect the D.V.M to TP11.
(4).Adjust the AWT sensor output (VR502) so that the voltage become 1.7V.
(5).Connect the D.V.M. between TP11 (HOT) and TP21 (GND).
(6).Adjust the AWT sensor control so that the sensor voltage is 20mV+-5mV.

31. AWT SENSOR LOW ILLUMINATION CUT ADJUSTMENT

TP	ADJ.	IRIS	CHART
P501-(2)	VR501	AUTO	
M. EQ.		SPEC.	
D.V.M		3.0V~4.6V	

(1).Set the white balance select switch to "FULL AUTO" position.
(2).Set the Illumination on surface of the AWT sensor to 5Lx+-0.5Lx.
(3).Adjust the low illumination cut (VR501) so that the voltage (P501-2) is 3.0V~4.6V.
(4).Confirm that the voltage (P501-2) becomes 0~1V more than 7Lx.

32. AWT WHITE BALANCE ADJUSTMENT

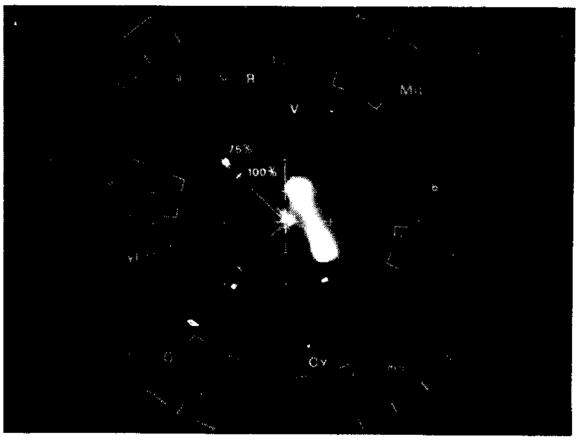
A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR302 VR309	AUTO	WHITE CARD
M. EQ.		SPEC.	
VECTOR SCOPE		VECTORS CENTRE	

(1).Set the white balance select switch to "FULL AUTO" position.
(2).Aim the camera at the white card.
(3).Supply the video output signal to the vector scope.
(4).Adjust the white balance (VR302 and VR309) so that the colour vectors come centre position on the vector scope and then confirm the R/B gamma adjustment.

Note:
1. The vector scope has to be terminated (75 ohm), during adjusting
2. Make sure that the colour temperature of sensor surface is same as the surface of test chart.

BEFORE ADJ.



AFTER ADJ.

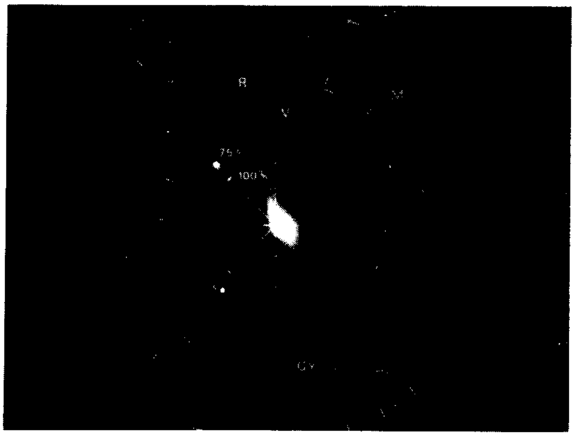


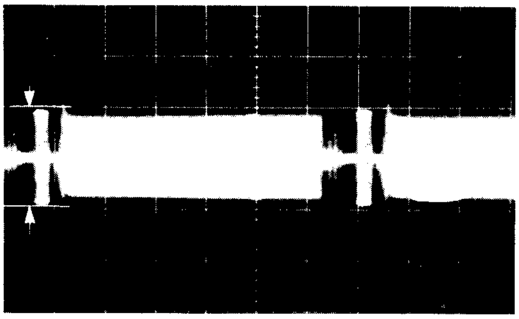
Fig.E37

B. WITH OSCILLOSCOPE

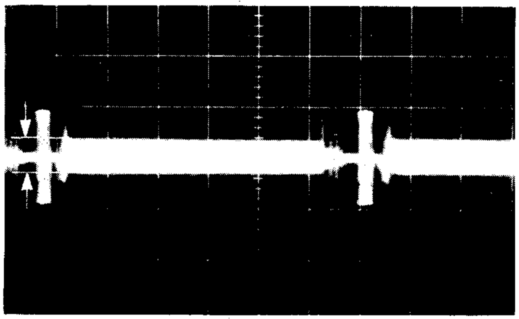
TP	ADJ.	IRIS	CHART
TP9	VR302 VR309	AUTO	WHITE CARD
M. EQ.		SPEC.	
OSCILLOSCOPE		MINIMUM WAVEFORM	

(1).Connect the CH1 of the scope to TP9 (H.rate).
(2).Adjust the white balance (VR302 and VR309) so that the waveform is minimized.

BEFORE ADJ.



AFTER ADJ.



20mV/10μsec. div.

Fig.E38

33. AWT WHITE TRACKING ADJUSTMENT

A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR324 VR325	AUTO	REFER TO NOTE 2.
M. EQ.		SPEC.	
VECTOR SCOPE		VECTORS CENTRE	

(1).Set the white balance select switch to "FULL AUTO" position.
(2).Set the camera in specific condition (Refer to note 2).
(3).Supply the video output signal to the vector scope.
(4).Adjust the white balance (VR324 and VR325) so that the colour vectors come centre position on the vector scope.

Note: 1
The vector scope has to be terminated (75 ohms), during adjusting.

BEFORE ADJ.

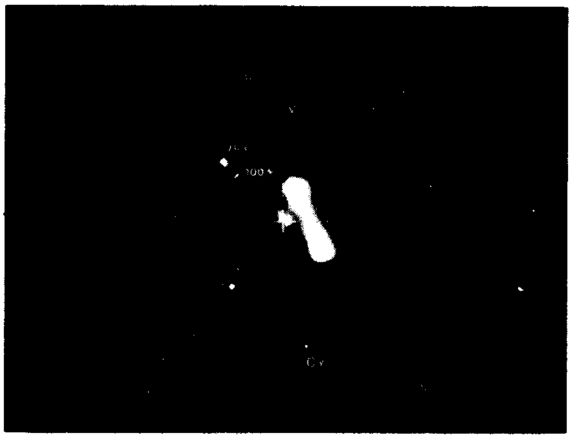


Fig. E39 (A)

AFTER ADJ.

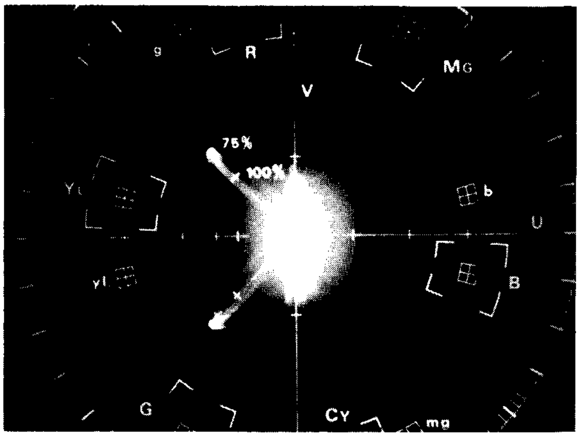


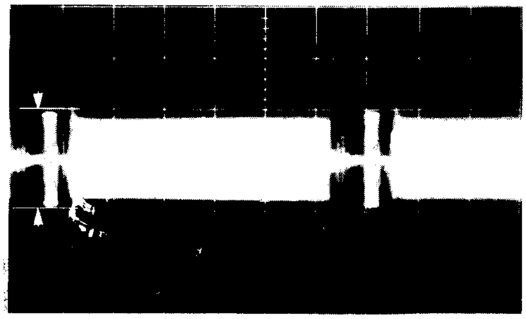
Fig.E39 (B)

B. WITH OSCILLOSCOPE

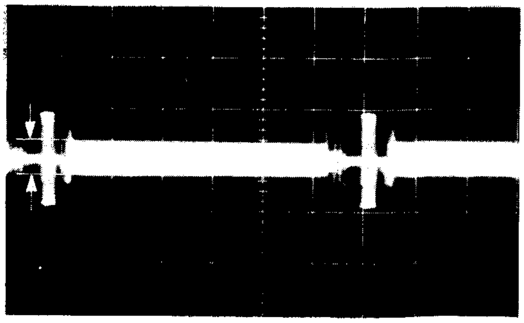
TP	ADJ.	IRIS	CHART
TP9	VR324 VR325	AUTO	REFER TO NOTE 2.
M. EQ.		SPEC.	
OSCILLOSCOPE		MINIMUM WAVEFORM	

(1).Set the camera in specific condition (Refer to note 2).
(2).Connect the CH1 of the scope to TP9 (H.rate).
(3).Adjust the white balance (VR324 and VR325) so that the waveform is minimized.

BEFORE ADJ.



AFTER ADJ.



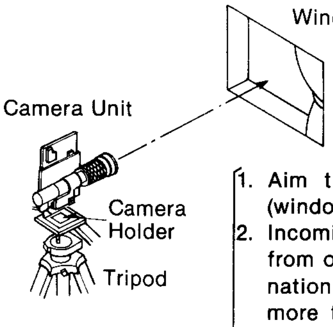
20mV/10μsec. div.

Fig.E40

Note 2:
To achieve this adjustment completely, set the measuring equipment as either of two examples.

(Example 1)

1. Aim the camera to outdoor (window side as possible as white object)
2. Incomming light must be coming from only out door. Illumination on the AWT sensor must be more than 500lux.

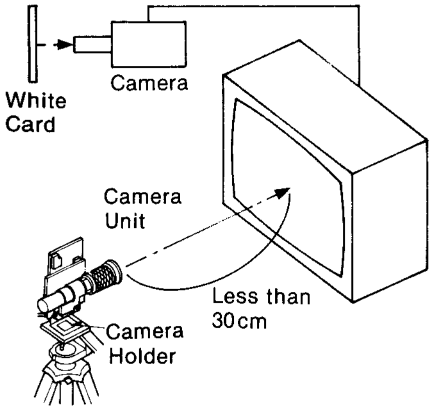

Window
Camera Unit
Camera Holder
Tripod

1. Aim the camera to outdoor (window side).
2. Incoming light must be come from only out door and illumination on the sensor must be more than 500Lx. and colour tempreture have to be within 5800~6500 degree kelbin.

Fig.E41

(Example 2)

1. Aim the camera to the Monitor TV with white cap on the lens.
2. Illumination on the AWT sensor must be more than 500Lx.


White Card
Camera
Camera Unit
Less than 30cm
Camera Holder

1. Aim the camera to the TV Monitor with white cap on the lens from less the 30cm distance.
2. Set the TV Monitor at the white picture by using another camera which is shooting the white card. Or set the TV/VIDEO Selector of TV Monitor to video side and do not supply any video signal to video input.
3. Illumination on the AWT sensor must be more than 500Lx.
4. Make sure that the brightness control is centre position.

Fig.E42

Note 3:
Colour temperature have to be within 5800~6500 degrees kelbin.

Note 4:
After completion of above adjustment make recording at outdoor and comfirm playback picture so that colouring is natural.

AUTO FOCUS SECTION

AUTO FOCUS ADJUSTMENT PROCEDURES

LOCATION OF THE AUTO FOCUS ADJUSTMENT POINT

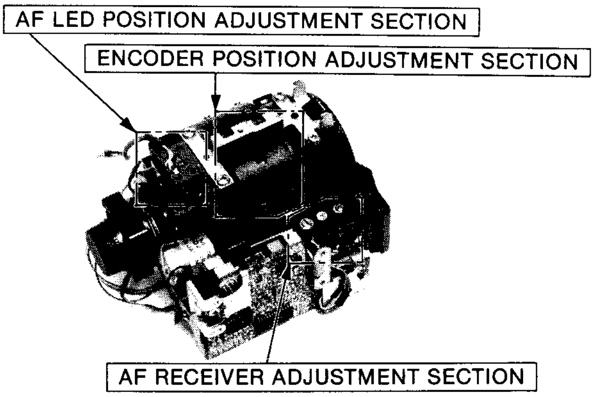

AF LED POSITION ADJUSTMENT SECTION
ENCODER POSITION ADJUSTMENT SECTION
AF RECEIVER ADJUSTMENT SECTION

Fig. E43

Note:

1. Distance that is mentioned in this manual means distance between the camera lens and the object (for example:chart) when the focus lens is set to infinity (∞)
2. If you disconnect the connector P2 on the AF C.B.A (VEP00F61A), Auto Focus does't work.

1. AF LED POSITION ADJUSTMENT

TP	ADJ.	IRIS	CHART
	AF LED CONTROL SCREW (REFER TO FIG. E46)	AUTO	CROSS CHART

M. EQ.	SPEC.
TV MONITOR IR CAMERA	

(1).Set the Focus mode selector to "AUTO" position.
(2).Set the zoom lens to 54mm.
(3).Aim the camera at the cross chart as shown in Fig.E47, in 2930mm distance so that the cross point of the chart comes to centre on the TV monitor.
(4).Set the lighting to dim.
(5).Set the measuring equipment as shown below.

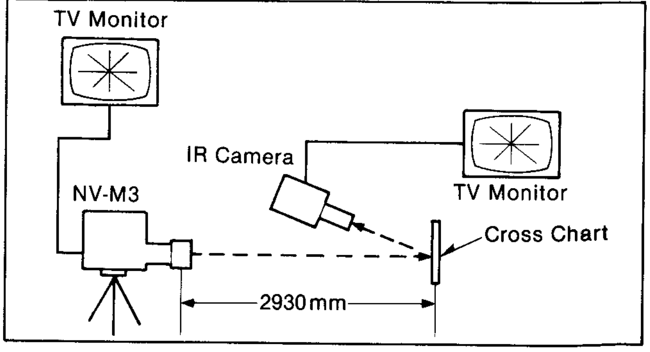

TV Monitor
IR Camera
NV-M3
TV Monitor
Cross Chart
2930mm

Fig. E44 Setting of the Measuring Equipment

(6).Adjust the AF LED FOCUS control screw (A) so that the infrared signal is just in focus (become small and clear as possible) on the cross chart refer to Fig. E45.

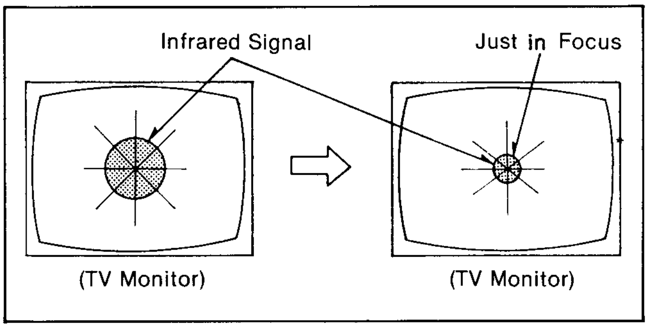

Infrared Signal
Just in Focus
(TV Monitor)
(TV Monitor)

Fig. E45

(7).Adjust the AF LED position control screw (B and C) so that the infrared signal strikes centre of the cross chart, even if the zoom lens moves from wide to Tele and from tele to wide, refer to Fig. E46.

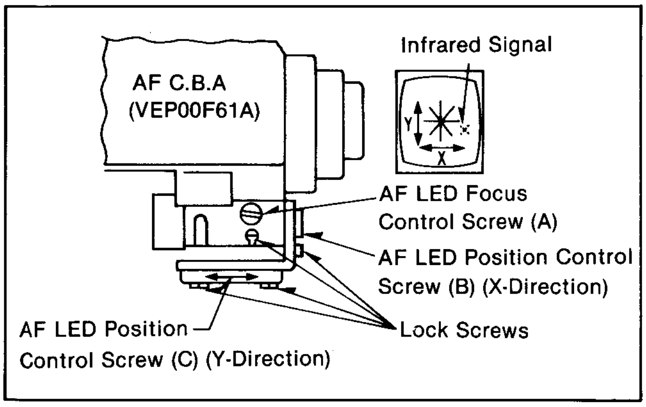

AF C.B.A
(VEP00F61A)
Infrared Signal
Y
X
AF LED Focus
Control Screw (A)
AF LED Position Control
Screw (B) (X-Direction)
Lock Screws
AF LED Position
Control Screw (C) (Y-Direction)

Fig. E46

Note 1:
Please make the cross chart that is written in bold script on the white paper as shown below.

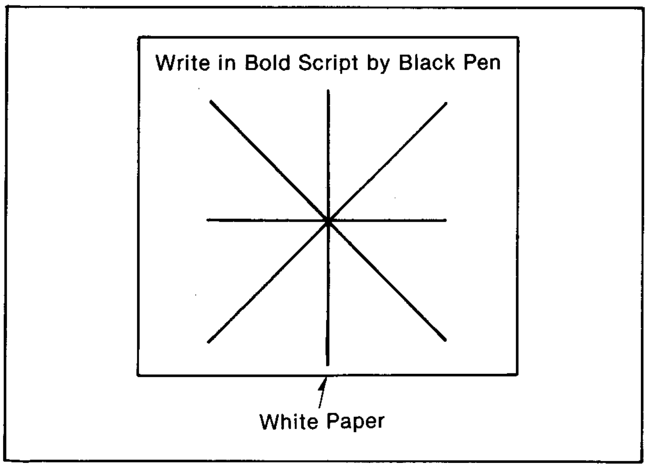

Write in Bold Script by Black Pen
White Paper

Fig. E47

Note 2:
If you replace the only IR LED unit, adjust the AF LED position screw (B and C) watching the TV Monitor so that the picture is just in focus on the TV Monitor.

Note 3:
If you don't have the IR camera, modify the normal camera, so as to remove the Infrared cut filter from the front of the pick-up tube as shown below.

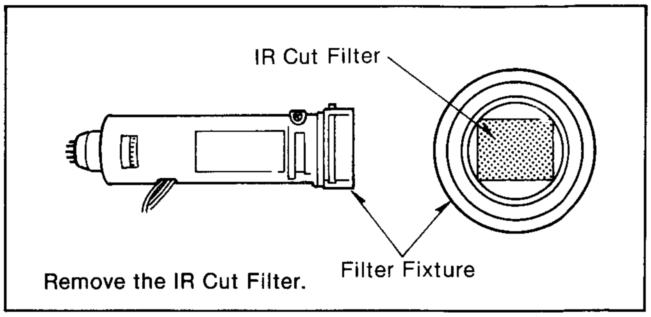

IR Cut Filter
Remove the IR Cut Filter.
Filter Fixture

Fig. E48

2. AF LED CURRENT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4 (HOT) TP5 (GND)	VR3	AUTO	
M. EQ.		SPEC.	
OSCILLOSCOPE		600mV	

(1).Set the Focus mode selector to "AUTO" position.
(2).Blind the AF receiver unit to cut of infrared signal.
(3).Connect the scope to TP4(HOT) and TP5(GND).
(4).Adjust the AF LED current (VR3) so that the waveform is 600mV.

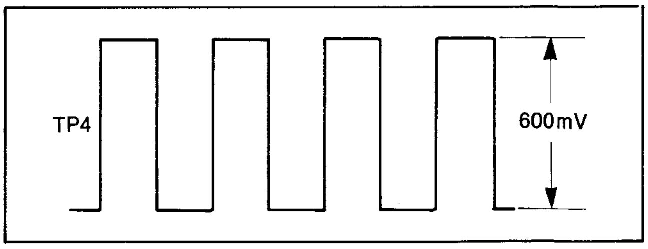


Fig. E49

3. OFF SET ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1 (CH-1) TP2 (CH-2)	VR1 VR2	AUTO	
M. EQ.		SPEC.	
OSCILLOSCOPE		(REFER TO FIG. E50)	

(1).Set the Focus mode selector to "AUTO" position.
(2).Blind the AF receiver unit to cut of infrared signal.
(3).Connect the scope to TP1(CH-1) and TP2(CH-2), and connect the External triger to TP3.

(4).Adjust the off set control (VR1,VR2) so that a swing (A) and (B) of waveform is the same as up and down, and minimize as posible (refer to Fig.E50)

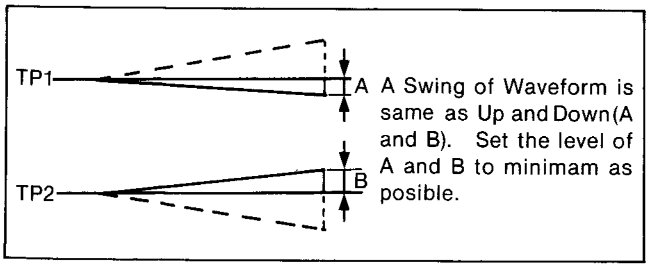

TP1
TP2
A
B
A Swing of Waveform is same as Up and Down(A and B). Set the level of A and B to minimam as posible.

Fig.E50

4. ENCODER POSITION ADJUSTMENT

TP	ADJ.	IRIS	CHART
	ENCODER (REFER TO FIG. E43)	AUTO	CROSS CHART
M. EQ.		SPEC.	
ENCODER JIG			

(1).Set the Focus mode selector to "MANUAL" position.
(2).Aim the camera at the cross chart as shown in Fig. E47 in 1208mm distance.
(3).Solder the encoder JIG to the connector P6 of the AF C.B.A (VEP00F61A) as shown below.

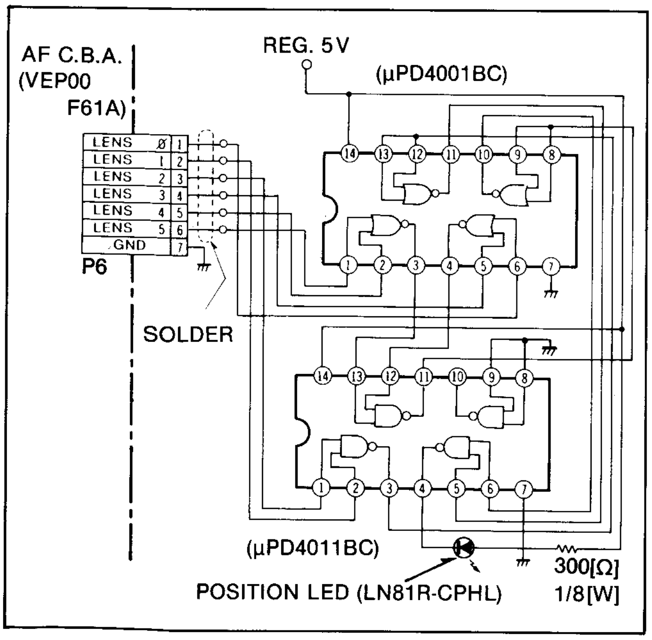

AF C.B.A. (VEP00 F61A)
REG. 5V
(µPD4001BC)
LENS Ø 1
LENS 1 2
LENS 2 3
LENS 3 4
LENS 4 5
LENS 5 6
GND 7
P6
SOLDER
(µPD4011BC)
POSITION LED (LN81R-CPHL)
300[Ω]
1/8[W]

Fig.E51

(4).Remove the camera sensor circuit board (VJB20187).

Note 1:
Disconnect the connector P2 from the AF C.B.A (VEP0061A)

(5).Loose the clamp screws (A) as shown in Fig E52.
Slide the Encorder plate as arrow mark shown in Fig E52 so that the position LED of encoder JIG light up.

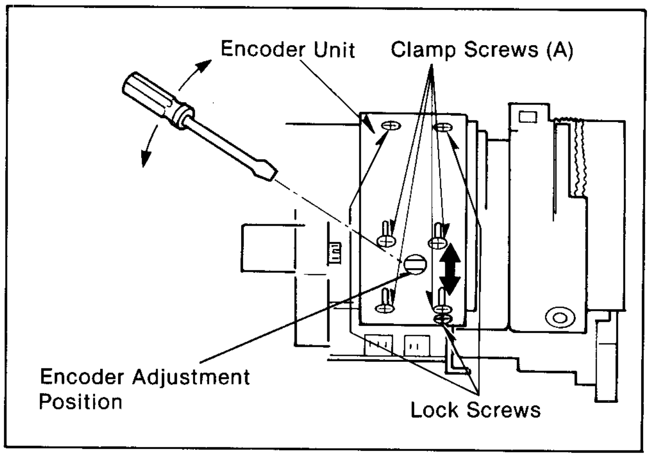

Encoder Unit
Clamp Screws (A)
Encoder Adjustment Position
Lock Screws

Fig.E52

5. AF RECEIVER (1) ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP2	PSD1	AUTO	BLACK CHART
M. EQ.		SPEC.	
OSCILLOSCOPE		REST TIME (T) IS MINIMIZED (REFER TO FIG. E54)	

(1).Set the Focus mode selector to "AUTO" position.
(2).Aim the camera at the black chart as shown in Note 1, in 1130mm distance.
(3).Set the zoom lens to 30mm
(4).Connect the scope to TP2.
(5).Loose the lock screw, refer to Fig.E53.
(6).Adjust the AF receiver control (PSD1) so that the rest time(T) is minimized. (Refer to Fig.E54)

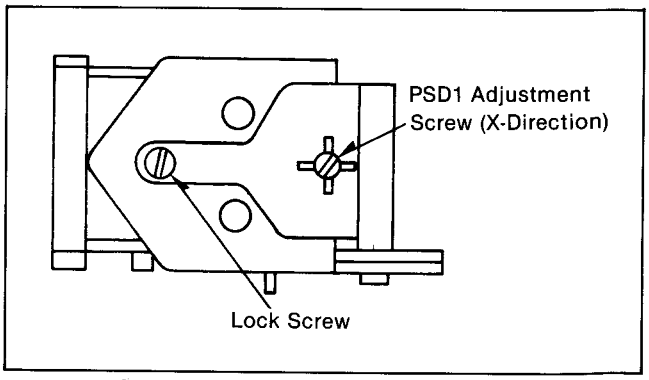

PSD1 Adjustment Screw (X-Direction)
Lock Screw

Fig.E53

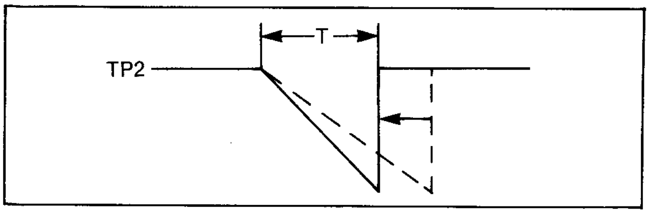


Fig.E54

Note 1:
Please make the black chart that is written black on the white paper by black pen.

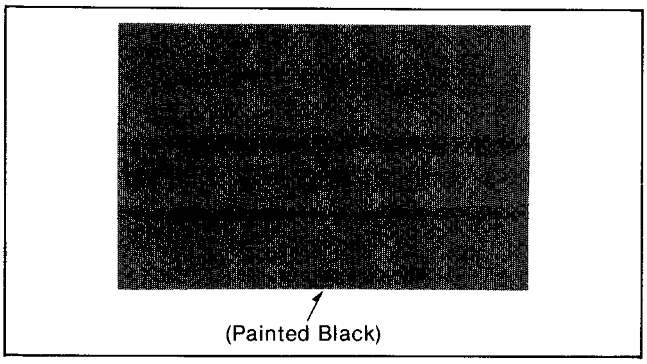


Fig.E55 Black Chart

Note 2:
(1) To make this adjustment, use external trigger for the scope, that supplys from TP3 of the AF C.B.A (VEP00F61A) and triggers at falling edge.
(2) Set the room lighting to dim (100Lx~150Lx)

6. AF RECEIVER (2) ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP2	PSD2	AUTO	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		40mV~60mV	

(1).Set the Focus mode selector to "AUTO" position.
(2).Aim the camera at the white card, in 12.93m distance.
(3).Connect the scope to TP2.
(4).Loose the lock screw,refer to Fig.E56.
(5).Adjust the AF receiver control (PSD2) so that the waveform is 40mV~60mV as Fig.E57.

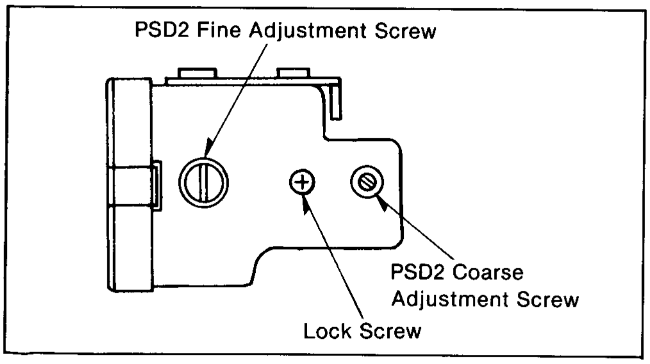


Fig.E56

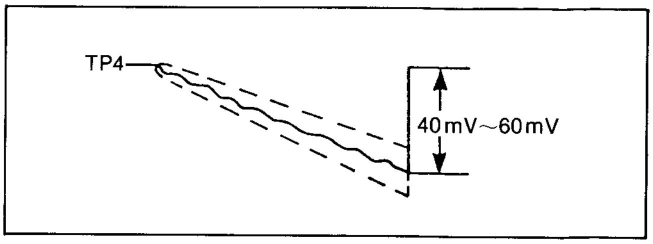


Fig. E57

Note 1:
To make this adjustment, use external trigger for the scope, that supplies from TP3 of the AF C.B.A. (VEP00F61A) and triggers at the falling edge.

Note 2:
If you do not have space for 13m, adjust the AF receiver control as follows.
(1).Set the Focus mode selector to "AUTO" position.
(2).Aim the camera at the white card, more than 6m far.
(3).Adjust the AF receiver control (PSD2) watching the TV Monitor so that the object is just in focus on the TV Monitor.

7. D/A CONVERTER ADJUSTMENT

TP	ADJ.	IRIS	CHART
	VR4	AUTO	CROSS CHART
M. EQ.		**SPEC.**	
TV MONITOR		JUST IN FOCUS	

(1).Set the Focus mode selector to AUTO position.
(2).Aim the camera at the cross chart, in 1440mm distance.
(3).Adjust the D/A control (VR4) so that the picture on the TV monitor screen is just in focus.

EVF ADJUSTMENT PROCEDURES

PREPARATION

The following adjustments are for the electronic view finder

(1).Connect the view finder connector to the EVF connector on the unit.
(2).The camera circuit must be completly aligned before viewfinder adjustment is made.

1. HORIZONTAL HOLD ADJUSTMENT

TP	ADJ.	IRIS	CHART
PIN 22 OF IC101	VR102		

M. EQ.	SPEC.
FREQUENCY COUNTER	15.6kHz±0.2kHz

(1).Connect the frequency counter to Pin.22 of IC101.
(2).Adjust the horizontal hold control (VR102) so that the frequency is 15.6 KHz+-0.2KHz.

2. PICTURE TILT ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIEW FINDER	DEFLECTION COIL	CLOSED	

M. EQ.	SPEC.
VIEW FINDER	RASTER IS STRAIGHT.

(1).Reduce picture size using the EVF V.size (VR101).
(2).Loosen the deflection coil holding screw.
(3).Turn the iris control fully counter clockwise (CLOSE side).
(4).Observe the viewfinder, and turn the deflection coil until the raster is straight.
(5).Tighten the deflection coil holding screw.

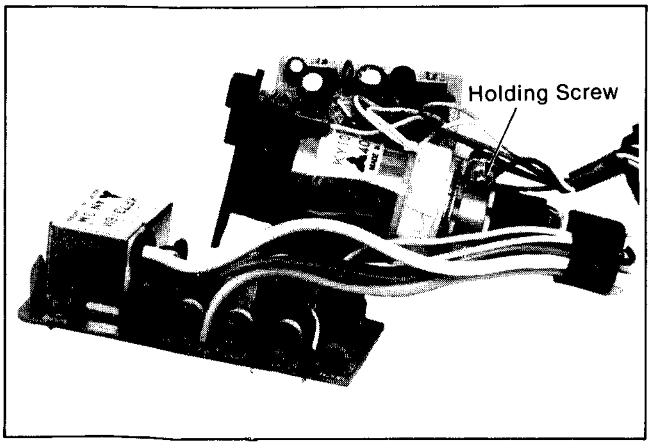


Fig. E58

3. EVF V-SIZE AND H-SIZE ADJUSTMENT

TP	ADJ.	IRIS	CHART
	TF201 VR101	NORMAL	BALL CHART

M. EQ.	SPEC.
VIEW FINDER	DISAPPER THE BALL CHART EDGE TRUE CIRCLE AS FIG. E59

(1).Aim the camera at the ball chart, and line up the reference arrow head with edge of the raster (blanking) on the view finder.
(2).Then adjust the V.size (VR101) so that the circle in the chart is nearly a true circle.

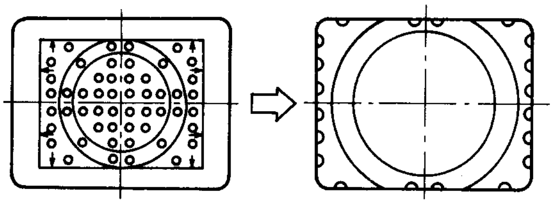


Fig.E59

4. CONTRAST AND BRIGHTNESS ADJUSTMENT

TP	ADJ.	IRIS	CHART
	VR203 VR202	NORMAL	GRAY SCALE

M. EQ.	SPEC.
VIEW FINDER	NATURAL GRADATION

(1).Aim the camera at the logarithmic gray scale chart.
(2).Adjust the contrast control (VR203) and brightness control (VR202) so that the black and white gradation will be the same on the view finder screen as that in the monitor.

5. FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
	VR201	NORMAL	BALL CHART

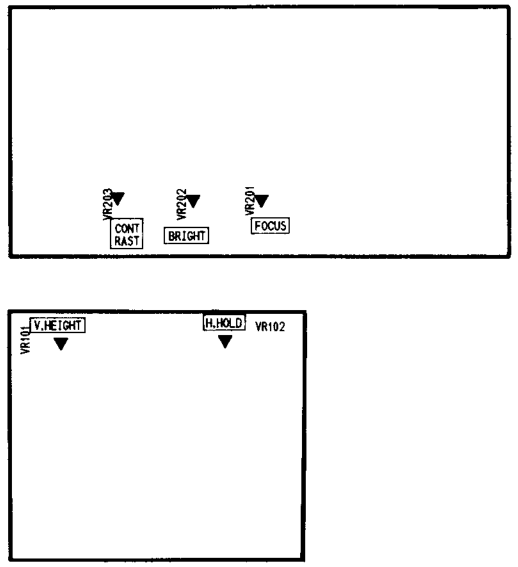
M. EQ.	SPEC.
VIEW FINDER	BEST RESOLUTION

(1).Aim the camera at the ball chart.
(2).Adjust the focus control (VR201) for best resolution in the view finder.

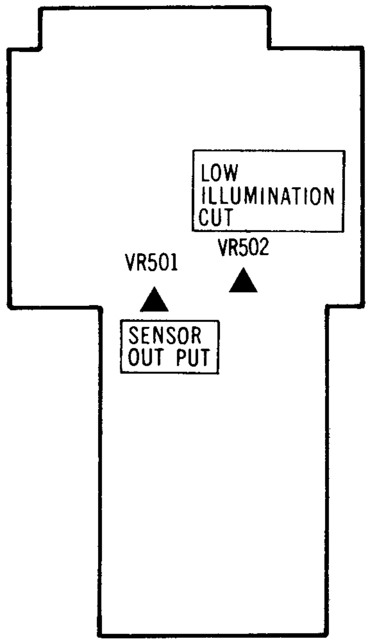
FOR SCOPE TRIGGER
H. rate : TP10
V. rate : TP14

LOCATION OF TEST POINTS AND CONTROLS (CAMERA SECTION)

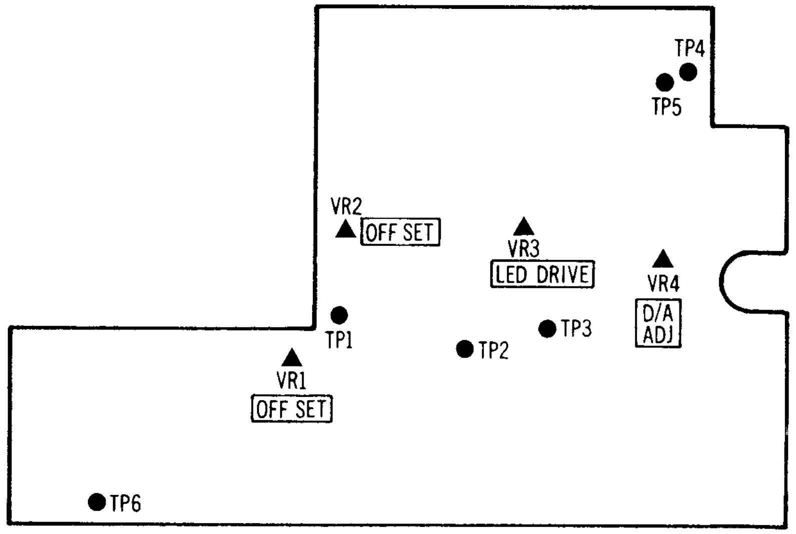
E.V.F. —— COMPONENT SIDE ——


VR203
CONT RAST
VR202
BRIGHT
VR201
FOCUS
VR101
V.HEIGHT
H.HOLD
VR102

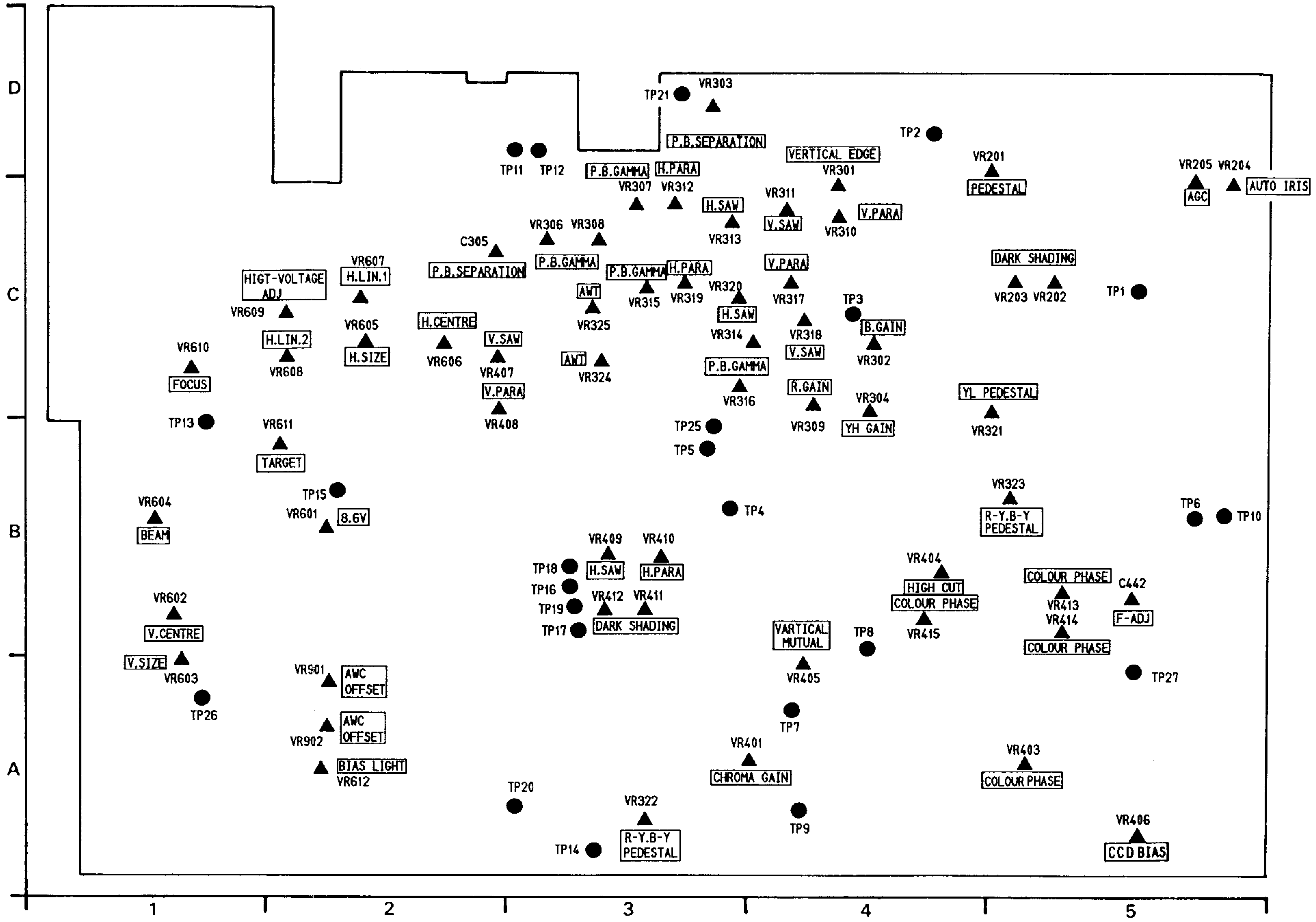
CAMERA SENSOR —— COMPONENT SIDE ——


LOW ILLUMINATION CUT
VR501
VR502
SENSOR OUT PUT

AUTO FOCUS —— COMPONENT SIDE ——


TP4
TP5
VR2
OFF SET
VR3
LED DRIVE
VR4
D/A ADJ
TP1
TP2
TP3
VR1
OFF SET
TP6

CAMERA MAIN —— COMPONENT SIDE ——


D
C
B
A
1
2
3
4
5
TP21
VR303
P.B.SEPARATION
TP2
TP11
TP12
P.B.GAMMA
H.PARA
VERTICAL EDGE
VR301
VR201
PEDESTAL
VR205
VR204
AGC
AUTO IRIS
VR307
VR312
H.SAW
VR311
V.SAW
VR310
V.PARA
VR313
VR306
VR308
C305
P.B.SEPARATION
P.B.GAMMA
P.B.GAMMA
H.PARA
V.PARA
DARK SHADING
HIGT-VOLTAGE ADJ
VR607
H.LIN.1
AWT
VR315
VR319
VR320
VR317
TP3
VR203
VR202
TP1
VR609
VR605
H.CENTRE
VR325
H.SAW
B.GAIN
VR610
H.LIN.2
H.SIZE
V.SAW
VR314
VR318
VR302
VR608
VR606
VR407
AWT
VR324
V.SAW
FOCUS
V.PARA
P.B.GAMMA
VR316
R.GAIN
VR304
YL PEDESTAL
TP13
VR611
VR408
TP25
VR309
YH GAIN
VR321
TARGET
TP5
TP15
VR323
VR604
VR601
8.6V
TP4
R-Y.B-Y PEDESTAL
TP6
TP10
BEAM
VR409
VR410
TP18
H.SAW
H.PARA
VR404
COLOUR PHASE
C442
TP16
VR412
VR411
HIGH CUT
VR413
F-ADJ
VR602
TP19
COLOUR PHASE
VR414
TP17
DARK SHADING
VARTICAL MUTUAL
TP8
VR415
COLOUR PHASE
V.CENTRE
V.SIZE
VR603
VR901
AWC OFFSET
VR405
TP27
TP26
AWC OFFSET
TP7
VR902
VR401
VR403
BIAS LIGHT
VR612
CHROMA GAIN
COLOUR PHASE
TP20
VR322
TP9
VR406
TP14
R-Y.B-Y PEDESTAL
CCD BIAS

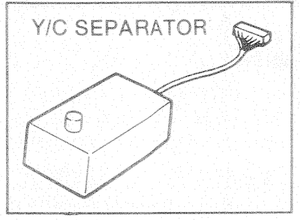
CAMERA MAIN CIRCUIT BOARD TP & CONTROL ADDRESS INFORMATION					
Test Point		VR202	C-5	VR403	A-5
TP1	C-5	VR203	C-5	VR404	B-4
TP2	D-4	VR204	C-5	VR405	A-4
TP3	C-4	VR205	C-5	VR406	A-5
TP4	B-3	VR301	C-4	VR407	C-2
TP5	B-3	VR302	C-4	VR408	C-2
TP6	B-5	VR303	D-3	VR409	B-3
TP7	A-4	VR304	C-4	VR410	B-3
TP8	B-4	VR306	C-3	VR411	B-3
TP9	A-4	VR307	C-3	VR412	B-3
TP10	B-5	VR308	C-3	VR413	B-5
TP11	D-3	VR309	C-4	VR414	B-5
TP12	D-3	VR310	C-4	VR415	B-4
TP13	B-1	VR311	C-4	VR601	B-2
TP14	A-3	VR312	C-3	VR602	B-1
TP15	B-2	VR313	C-3	VR603	A-1
TP16	B-3	VR314	C-4	VR604	B-1
TP17	B-3	VR315	C-3	VR605	C-2
TP18	B-3	VR316	C-3	VR606	C-2
TP19	B-3	VR317	C-4	VR607	C-2
TP20	A-3	VR318	C-4	VR608	C-2
TP21	D-3	VR319	C-3	VR609	C-2
TP25	B-3	VR320	C-3	VR610	C-1
TP26	A-1	VR321	C-5	VR611	B-2
TP27	A-5	VR322	A-3	VR012	A-2
		VR323	B-5	VR901	A-2
Adjustment		VR324	C-3	VR902	A-2
		VR325	C-3	C305	C-2
VR201	D-5	VR401	A-4	C442	B-5

2-4-2. ELECTRICAL ADJUSTMENT FOR VTR SECTION

TEST EQUIPMENT AND TOOL

The following equipment is required for adjustment or the VTR section of VKR6810.

EQUIPT	SPECIFICATION
1. VTVM(Vacuum Tube Volt Meter) or DVM(Digital Volt Meter)	Voltage Range:0.001~50V
2. Dual Trace Osc- illoscope	Voltage Range:0.005~50V /div. Frequency Range:0~10MHz Probe:10:1 and 1:1
3. Frequency Counter	Frequency Range:0~10MHz
4. Signal Sweep (Sinewave)	Frequency Range:0~10MHz
5. Video Sweep (Generator)	Frequency Range:0~10MHz
6. Y/C Separator (Part No:VFK0304)	


Y/C SEPARATOR

This is used to supply external video signalto a video recorder unit.

Fig.E60

7. Colour Monitor TV.
8. Plastic Tip Driver
9. VHS Alignment Tape (VFJ8125H3F)

PREPARATION

1. Remove the casing panels and open the main circuit board.
2. Disconnect the connector between the camera section and VTR section.
3. Supply the video signal to the VTR unit using the Y/C Separator (VFK0304)

- If you use the Line Adaptor VW-KM3, Y/C Separator is not necessary. Please use the only Line Adaptor.

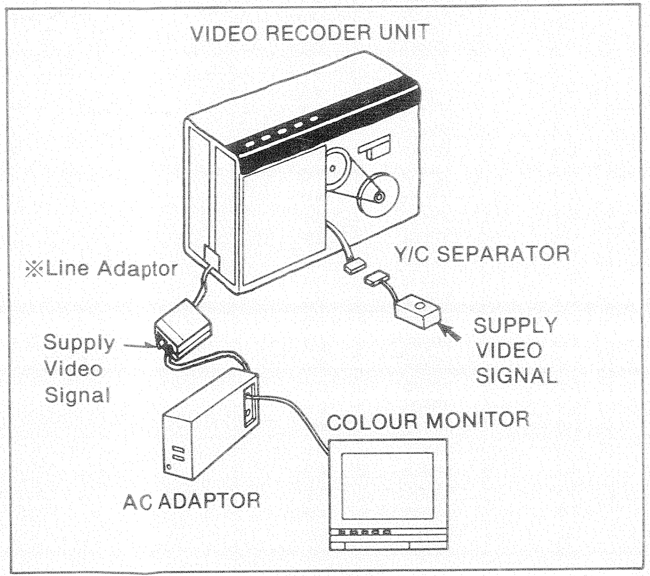
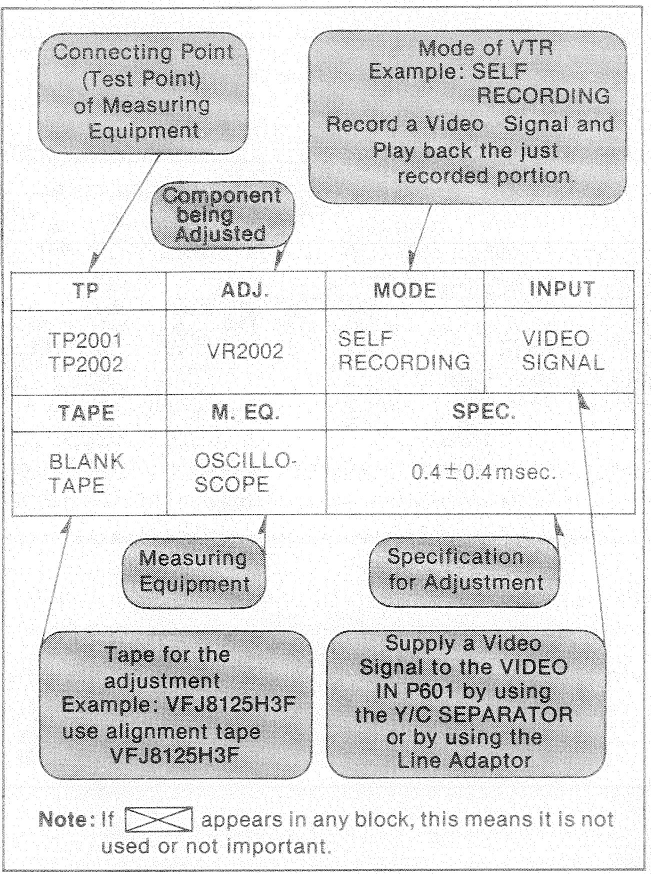

VIDEO RECODER UNIT
※Line Adaptor
Y/C SEPARATOR
SUPPLY VIDEO SIGNAL
Supply Video Signal
COLOUR MONITOR
AC ADAPTOR

Fig.E61

HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Mode of VTR Example: SELF RECORDING Record a Video Signal and Play back the just recorded portion.
Component being Adjusted
Measuring Equipment
Specification for Adjustment
Tape for the adjustment Example: VFJ8125H3F use alignment tape VFJ8125H3F
Supply a Video Signal to the VIDEO IN P601 by using the Y/C SEPARATOR or by using the Line Adaptor

TP	ADJ.	MODE	INPUT
TP2001 TP2002	VR2002	SELF RECORDING	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	0.4±0.4msec.	

Note: If ☒ appears in any block, this means it is not used or not important.

Fig. E62

FOR TRIGGERING OF THE OSCILLOSCOPE

To trigger the scope, the following test point is used.
H.rate :
TP3002
(Video Output)
V.rate :
TP3005 or TP2001
(Head Switching Signal)

1. REG. +5V ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP1003	VR1003	REC•PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	D.V.M.	5.1V±0.05V	

2. REG. +9V ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP1002	VR1002	REC•PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	D.V.M.	9.2V±0.05V	

3. UNDER CUT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP6009	VR6001	REC•PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	HIGH → PULSE → LOW	

(1).Supply the DC voltage 10.6V+-0.1VDC to the battery terminal.
Pay attention the polarity of power supply and battery terminal.
Red wire + (plus)
Black wire − (minus)
(2).Disconnect the multi connector of AC adaptor.
(3).Connect the scope to TP6009.
(4).Turn the under cut control (VR6001) fully counter clockwise.
(5).Turn VR6001 clockwise slowly until the waveform is changed from high to pulse train, then low.

4. CHARACTER POSITION ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIEW FINDER	VR6003	STOP	☒
TAPE	**M. EQ.**	**SPEC.**	
☒	VIEW FINDER	CHARACTER IS CENTRE OF EVF	

(1).Connect the EVF unit to the VTR unit.
(2).Display the battery remaining indicator and counter number on the EVF.
(3).Adjust the osc control (VR6003) so that the character position is shown below.

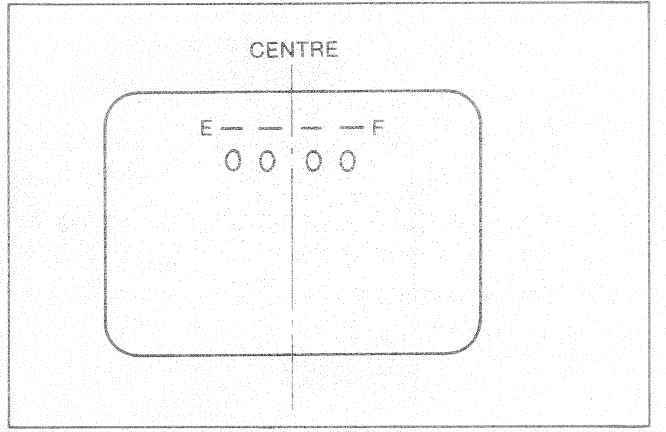

CENTRE
E — — — — F
0 0 0 0

Fig. E63

5. PG SHIFTER ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP2001 TP3002	VR2001	PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
ALIGNMENT TAPE (VFJ8125H3F)	OSCILLO-SCOPE	6H±0.5H	

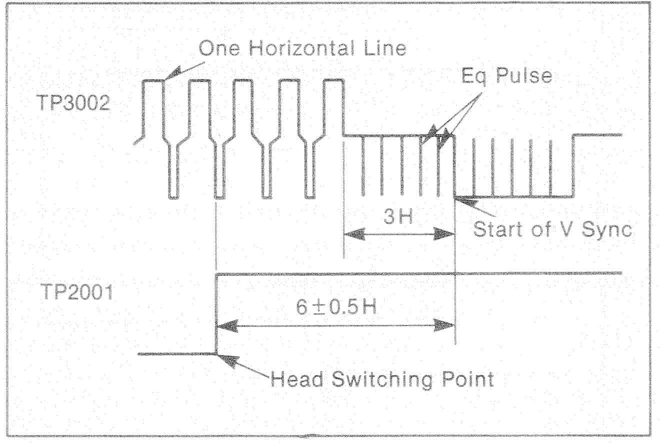

One Horizontal Line
Eq Pulse
TP3002
3H
Start of V Sync
TP2001
6±0.5H
Head Switching Point

Fig. E64

6. TRACKING FIX ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP2001 TP2002	VR2002	SELF RECORDING	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	0.4msec.±0.4msec.	

(1).Set the Tracking VR to the centre fix position.
(2).Record for a few minutes, and playback the just recorded portion.
(3).Adjust the tracking fix control (VR2002) so that the period of "T" is 0.4msec +- 0.4msec as shown below.

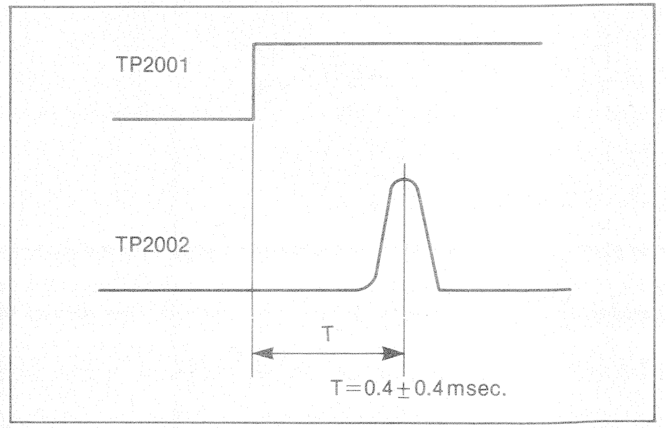

TP2001
TP2002
T
T=0.4±0.4msec.

Fig.E65

7. LUMINANCE RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3003 (HOT) TP3004 (GND)	VR3001	REC•PLAY	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	290mV ± 10mVp-p	

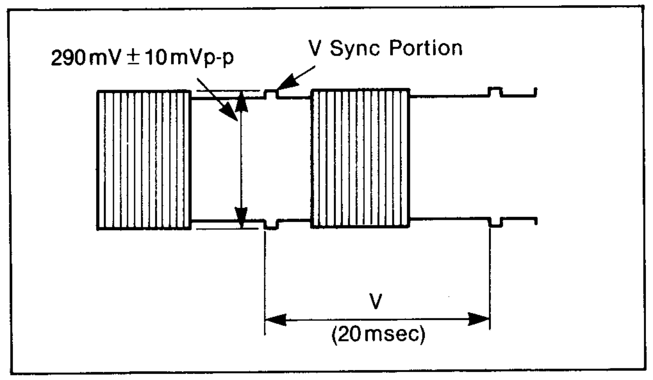

290mV ± 10mVp-p
V Sync Portion
V
(20msec)

Fig. E66

8. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4002 (HOT) TP4003 (GND)	C4020	REC•PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	D.V.M.	1.8mVrms ± 0.1mVrms	

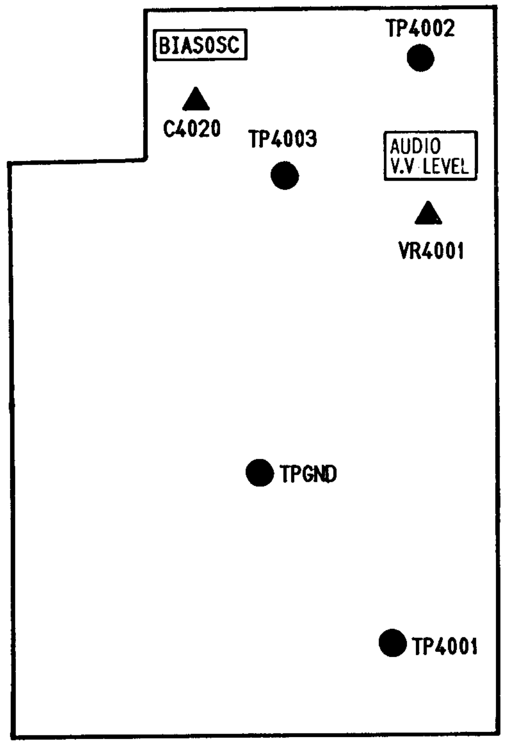
9. AUDIO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR4001	SELF RECORDING	1kHz, AUDIO −60dB SIGNAL/ VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	SIGNAL GENERA-TOR/D.V.M.	EE LEVEL = −8.0 ± 2dB P.B LEVEL = −8.0 ± 1dB	

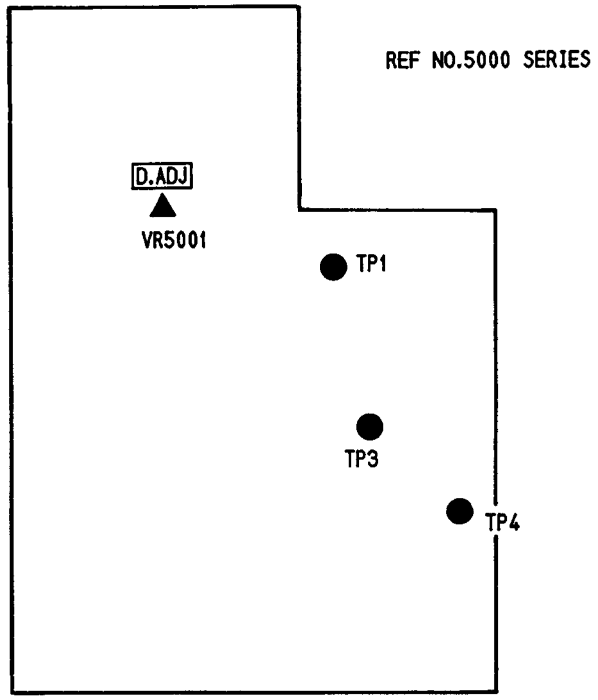
```
FOR  SCOPE  TRIGGER
    H. rate   :  TP3002
    V. rate   :  TP2001 or TP3005
```

LOCATION OF TEST POINTS AND CONTROLS (VTR SECTION)

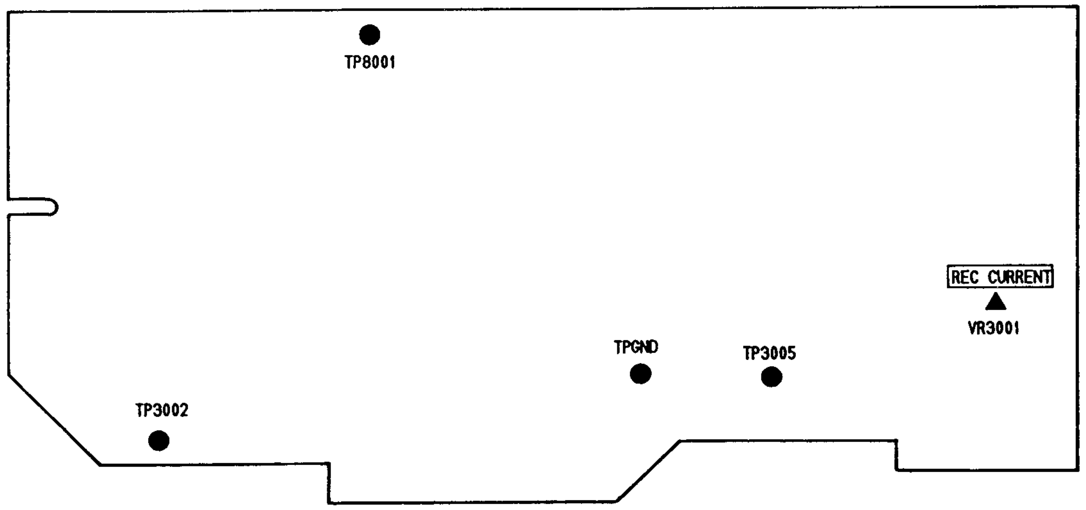
AUDIO —— COMPONENT SIDE ——


BIASOSC
C4020
TP4002
TP4003
AUDIO V.V LEVEL
VR4001
TPGND
TP4001

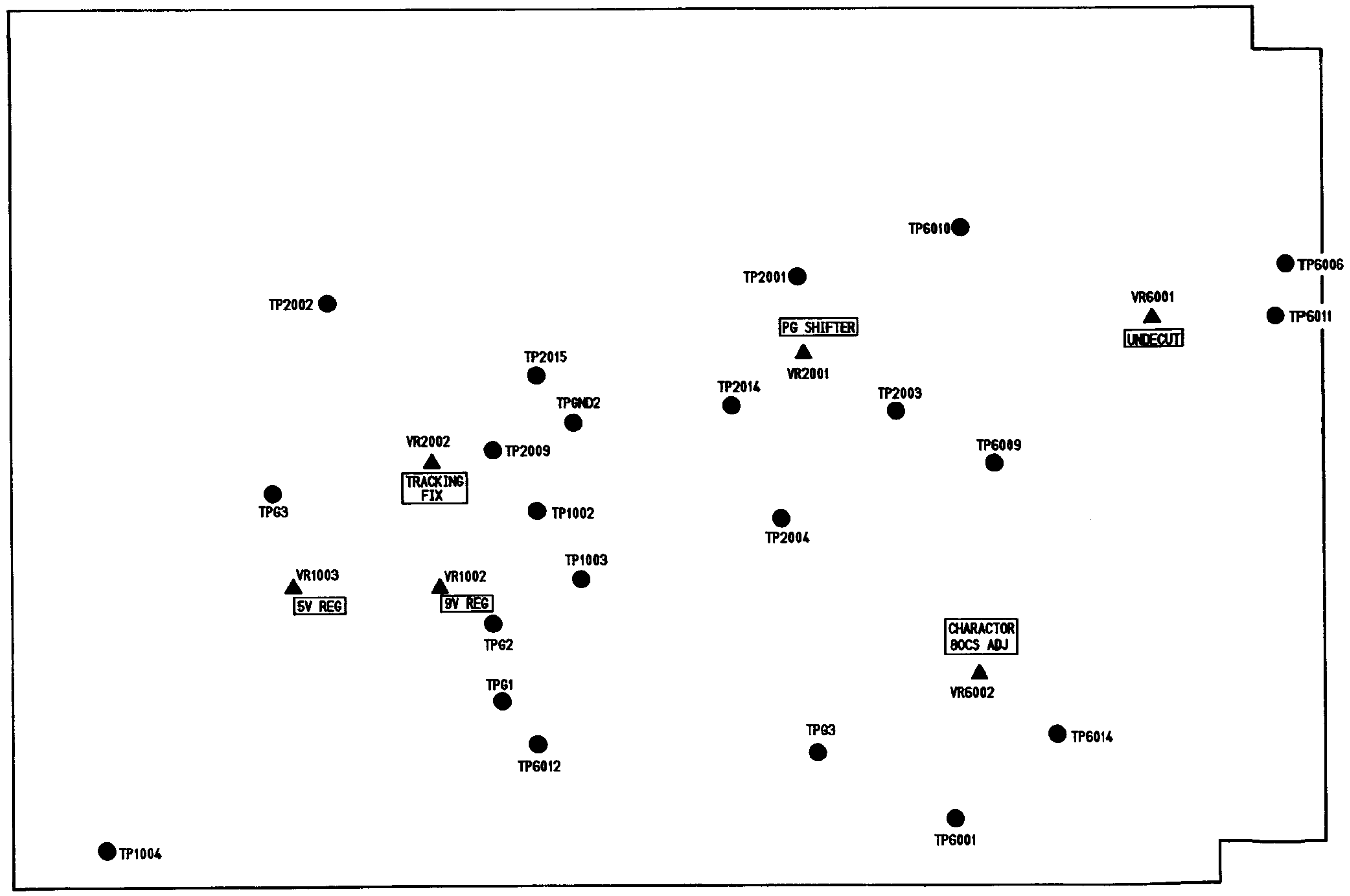
HEAD AMP —— COMPONENT SIDE ——


REF NO.5000 SERIES
D.ADJ
VR5001
TP1
TP3
TP4

LUMINANCE & CHROMINANCE —— COMPONENT SIDE ——

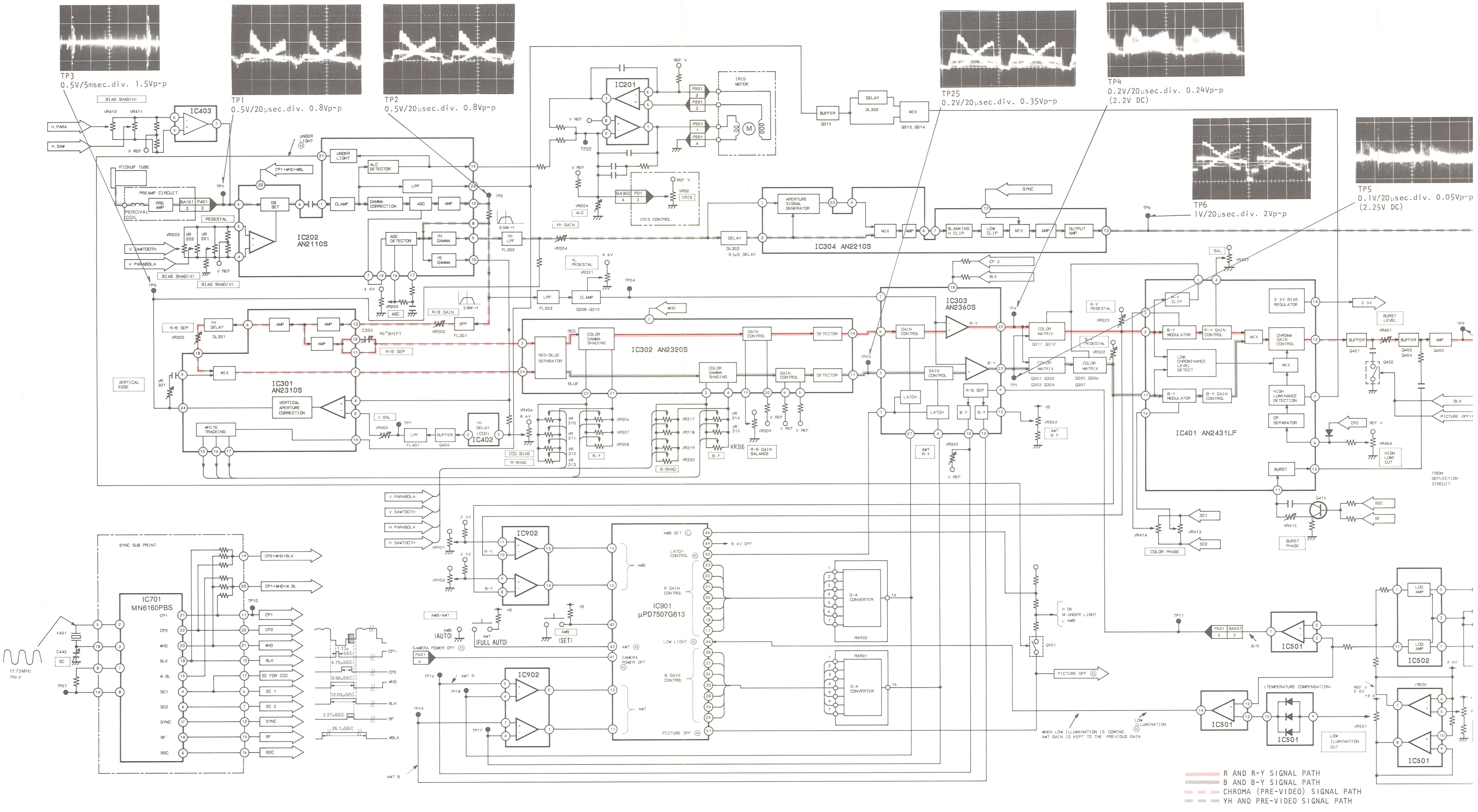

TP8001
REC CURRENT
VR3001
TPGND
TP3005
TP3002

MAIN —— COMPONENT SIDE ——


TP6010
TP6006
TP2001
VR6001
TP6011
TP2002
PG SHIFTER
UNDECUT
TP2015
VR2001
TP2014
TP2003
TPGND2
VR2002
TP2009
TP6009
TRACKING FIX
TPG3
TP1002
TP2004
TP1003
VR1003
VR1002
5V REG
9V REG
CHARACTOR 8OCS ADJ
TPG2
VR6002
TPG1
TPG3
TP6014
TP6012
TP6001
TP1004

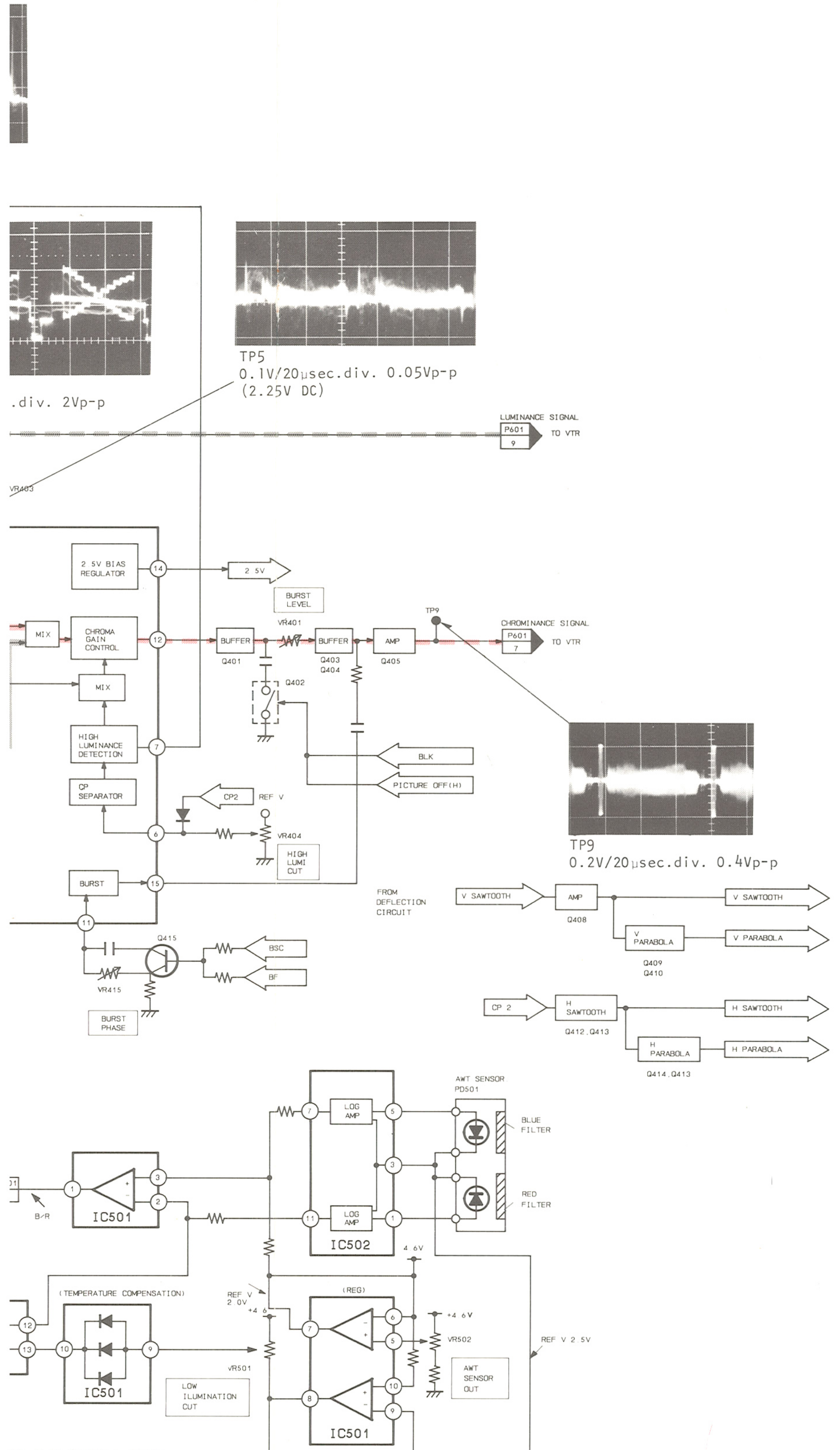
SECTION 3
BLOCK DIAGRAM & SCHEMATIC DIAGRAM

3-1. CAMERA PROCESS BLOCK DIAGRAM

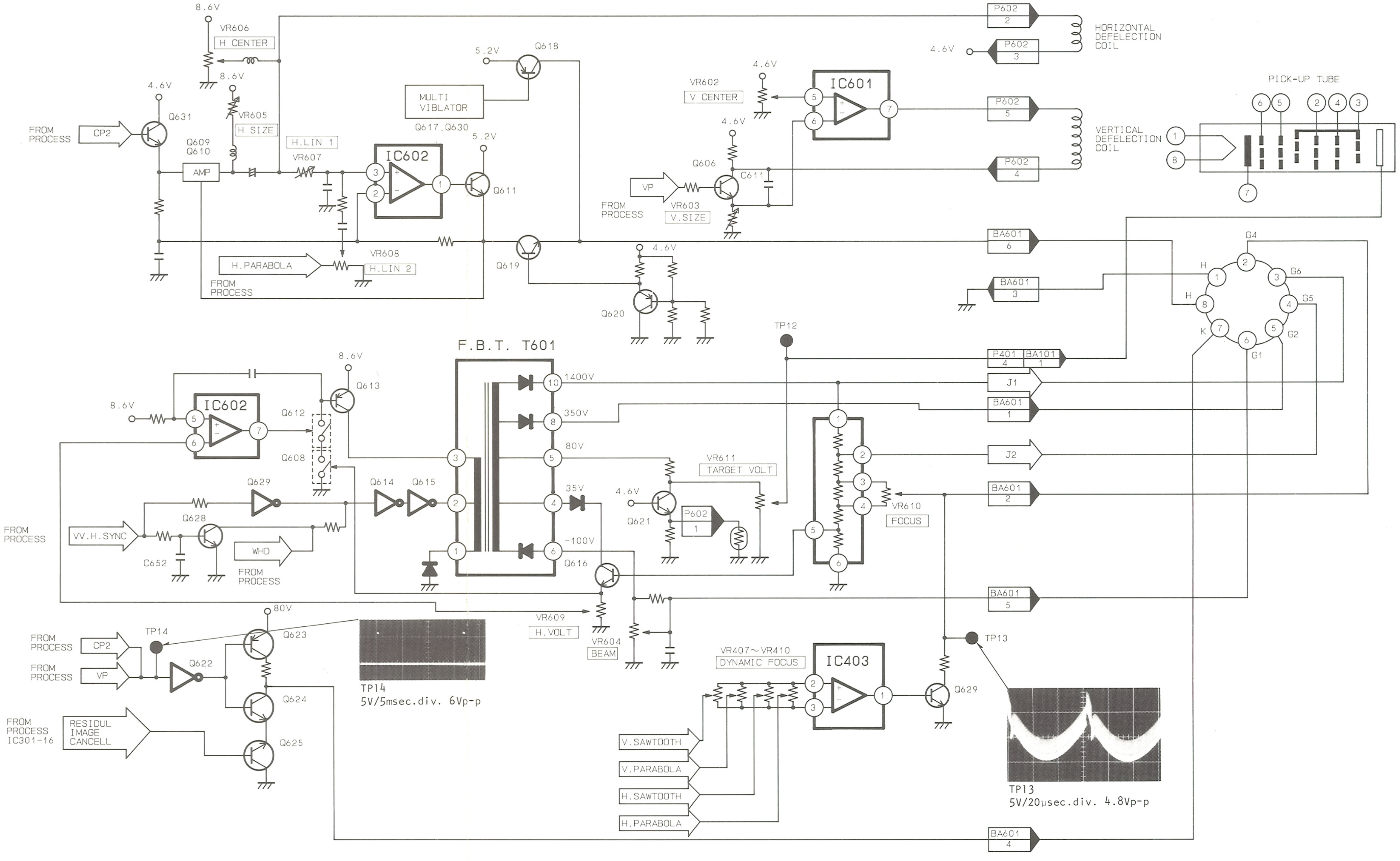


TP3
0.5V/5msec.div. 1.5Vp-p
TP1
0.5V/20μsec.div. 0.8Vp-p
TP2
0.5V/20μsec.div. 0.8Vp-p
TP25
0.2V/20μsec.div. 0.35Vp-p
TP4
0.2V/20μsec.div. 0.24Vp-p
(2.2V DC)
TP6
1V/20μsec.div. 2Vp-p
TP5
0.1V/20μsec.div. 0.05Vp-p
(2.25V DC)
BIAS SHAD(H)
H.PARA
H.SAW
IC403
V REF
PICKUP TUBE
PREAMP CIRCUIT
PRE AMP
PERCIVAL COIL
BA101
P401
PEDESTAL
V SAWTOOTH
V PARABOLA
BIAS SHAD(V)
UNDER LIGHT
CP1+WHD+WBL
ALC DETECTOR
LPF
OB SET
CLAMP
GAMMA CORRECTION
AGC
AMP
AGC DETECTOR
YH GAMMA
YE GAMMA
IC202
AN2110S
VR205
R/B GAIN
BPF
FL301
YH LPF
FL302
YH GAIN
VR304
IC201
IRIS MOTOR
P201
TP22
BA902
P01
VR204
IRIS
IRIS CONTROL
ALC
BUFFER
Q315
DELAY
DL302
MIX
Q313,Q314
APERTURE SIGNAL GENERATOR
SYNC
BLANKING H CLIP
LOW CLIP
OUTPUT AMP
IC304 AN2210S
DELAY
DL303
0.1μS DELAY
YL PEDESTAL
VR321
CLAMP
Q308-Q310
TP24
LPF
FL303
WHD
R/B SEP
VR303
1H DELAY
DL301
90°SHIFT
C305
VERTICAL EDGE
VR 301
MIX
IC301
AN2310S
VERTICAL APERTURE CORRECTION
WHITE TRACKING
V BAL
VR405
TP7
FL401
Q406
1H DELAY (CCD)
IC402
CCD BIAS
R-SHAD
RED/BLUE SEPARATOR
RED
BLUE
COLOR GAMMA SHADING
GAIN CONTROL
DETECTOR
IC302 AN2320S
VR310
VR311
VR312
VR313
VR306
VR307
VR308
VR317
VR318
VR319
VR320
VR314
VR315
VR316
B-SHAD
VR309
R/B GAIN BALANCE
CP 2
BLK
IC303
AN2360S
R-Y
B-Y
LATCH
R/B SEP
VR325
AWT R-Y
VR324
AWT B-Y
COLOR MATRIX
Q311 Q312
Q301 Q302
Q303 Q304
Q305 Q306
Q307
R-Y PEDESTAL
VR323
B-Y PEDESTAL
VR322
BAL
VR403
R-Y CLIP
2.5V BIAS REGULATOR
B-Y MODULATOR
R-Y GAIN CONTROL
LOW CHROMINANCE LEVEL DETECT
B-Y GAIN CONTROL
CHROMA GAIN CONTROL
HIGH LUMINANCE DETECTION
CP SEPARATOR
BURST
IC401 AN2431LF
BURST LEVEL
VR401
BUFFER
Q401
Q402
Q403 Q404
Q405
PICTURE OFF
REF V
VR404
HIGH LUMI CUT
FROM DEFLECTION CIRCUIT
Q415
BSC
BF
VR415
BURST PHASE
SC1
SC2
VR414
VR413
COLOR PHASE
SYNC SUB PRINT
IC701
MN6160PBS
X401
C442
SC
17.73MHz
3Vp-p
TP27
CP1
CP2
WHD
BLK
W.BL
SC1
SC2
SYNC
BF
BSC
CP2+WHD+BLK
CP1+WHD+W.BL
TP10
SC FOR CCD
SC 1
SC 2
1.13μSEC
4.75μSEC
9.58μSEC
12.03μSEC
2.27μSEC
26.1μSEC
WBLK
H PARABOLA
H SAWTOOTH
IC902
VR901
VR902
AWB/AWT
(AUTO)
AWT
(FULL AUTO)
AWB
(SET)
CAMERA POWER OFF
P601
IC901
μPD7507G613
AWB SET
8.6V OFF
LATCH CONTROL
R GAIN CONTROL
LOW LIGHT
B GAIN CONTROL
PICTURE OFF
CAMERA POWER OFF
D/A CONVERTER
RA902
RA901
TP16
AWT R
TP18
TP17
TP19
AWT B
H OK
M UNDER LIGHT
L AWB
Q901
TP11
P501
BA501
B-R
IC501
LOG AMP
IC502
TEMPERATURE COMPENSATION
(REG)
VR501
LOW ILLUMINATION
LOW ILLUMINATION CUT
WHEN LOW ILLUMINATION IS COMING, AWT GAIN IS KEPT TO THE PREVIOUS GAIN
R AND R-Y SIGNAL PATH
B AND B-Y SIGNAL PATH
CHROMA (PRE-VIDEO) SIGNAL PATH
YH AND PRE-VIDEO SIGNAL PATH

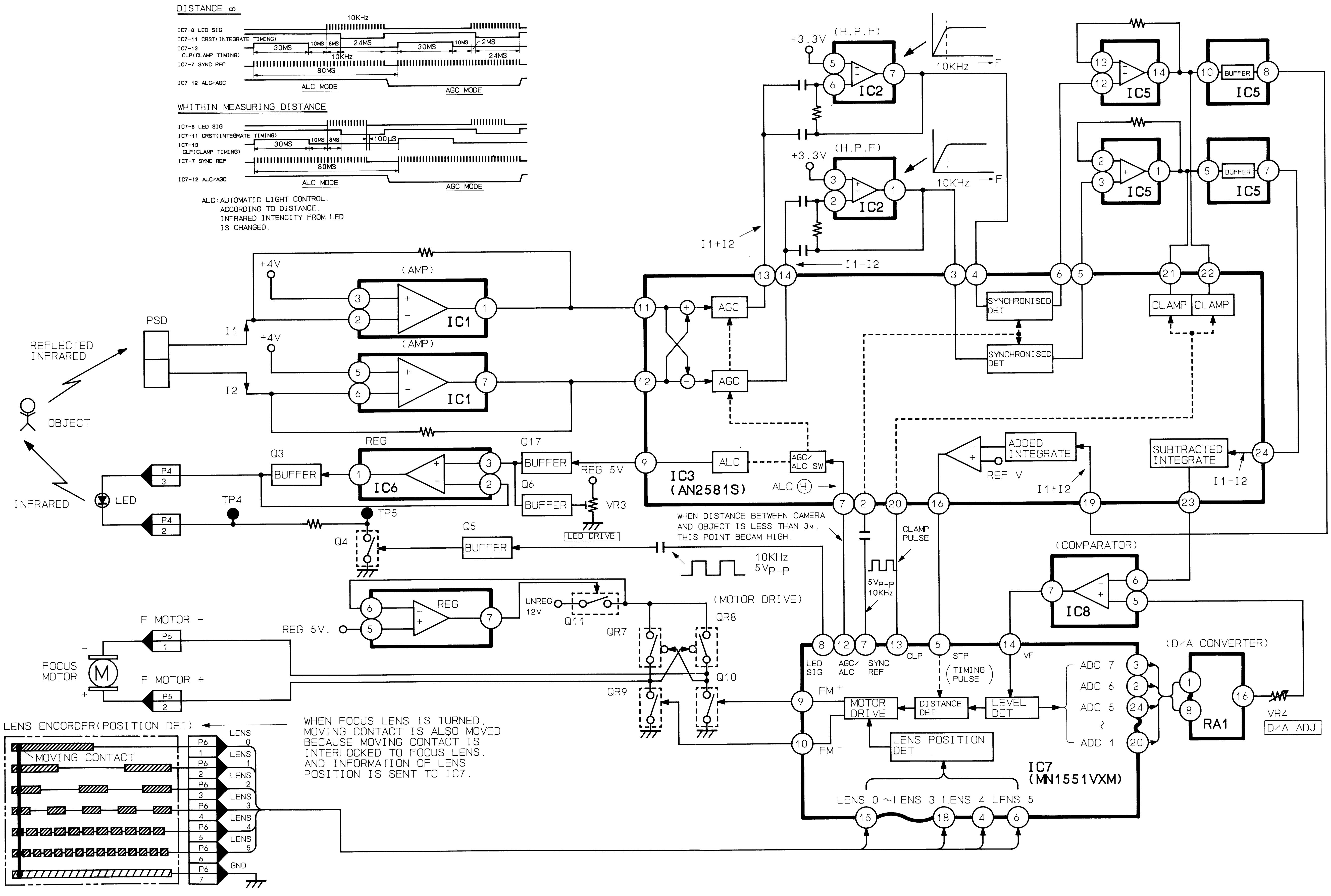
3-2. CAMERA DEFLECTION BLOCK DIAGRAM


TP5
0.1V/20µsec.div. 0.05Vp-p
(2.25V DC)
.div. 2Vp-p
LUMINANCE SIGNAL
P601 9
TO VTR
2.5V BIAS REGULATOR
2.5V
BURST LEVEL
MIX
CHROMA GAIN CONTROL
BUFFER
Q401
VR401
BUFFER
Q403 Q404
AMP
Q405
TP9
CHROMINANCE SIGNAL
P601 7
TO VTR
Q402
MIX
BLK
PICTURE OFF(H)
HIGH LUMINANCE DETECTION
CP SEPARATOR
CP2
REF V
VR404
HIGH LUMI CUT
TP9
0.2V/20µsec.div. 0.4Vp-p
BURST
FROM DEFLECTION CIRCUIT
V SAWTOOTH
AMP
Q408
V SAWTOOTH
V PARABOLA
Q409 Q410
V PARABOLA
Q415
BSC
BF
VR415
BURST PHASE
CP 2
H SAWTOOTH
Q412.Q413
H SAWTOOTH
H PARABOLA
Q414.Q413
H PARABOLA
AWT SENSOR PD501
LOG AMP
BLUE FILTER
RED FILTER
IC501
B-R
IC502
4.6V
(TEMPERATURE COMPENSATION)
REF V 2.0V
(REG)
+4.6V
VR502
AWT SENSOR OUT
REF V 2.5V
IC501
LOW ILLUMINATION CUT
VR501
IC501

ND R-Y SIGNAL PATH
ND B-Y SIGNAL PATH
OMA (PRE-VIDEO) SIGNAL PATH
AND PRE-VIDEO SIGNAL PATH


8.6V
VR606
H CENTER
P602 2
HORIZONTAL DEFELECTION COIL
4.6V
P602 3
5.2V
Q618
8.6V
4.6V
VR605
H SIZE
MULTI VIBLATOR
Q617,Q630
VR602
V CENTER
IC601
4.6V
PICK-UP TUBE
FROM PROCESS
CP2
Q631
Q609 Q610
H.LIN 1
VR607
IC602
5.2V
P602 5
VERTICAL DEFELECTION COIL
AMP
Q611
Q606
C611
P602 4
VP
FROM PROCESS
VR603
V.SIZE
BA601 6
G4
H.PARABOLA
VR608
H.LIN 2
FROM PROCESS
Q619
4.6V
BA601 3
G6
G5
H
Q620
G2
TP12
F.B.T. T601
K
G1
P401 4
BA101 1
8.6V
1400V
J1
8.6V
IC602
Q613
Q612
350V
BA601 1
Q608
80V
VR611
TARGET VOLT
J2
Q629
Q614
Q615
35V
4.6V
VR610
FOCUS
BA601 2
FROM PROCESS
VV.H.SYNC
Q628
Q621
P602 1
WHD
FROM PROCESS
C652
-100V
Q616
BA601 5
80V
TP14
Q623
VR609
H.VOLT
VR604
BEAM
TP13
FROM PROCESS
CP2
VR407~VR410
DYNAMIC FOCUS
IC403
FROM PROCESS
VP
Q622
Q629
Q624
TP14
5V/5msec.div. 6Vp-p
FROM PROCESS IC301-16
RESIDUL IMAGE CANCELL
Q625
V.SAWTOOTH
V.PARABOLA
H.SAWTOOTH
H.PARABOLA
TP13
5V/20µsec.div. 4.8Vp-p
BA601 4

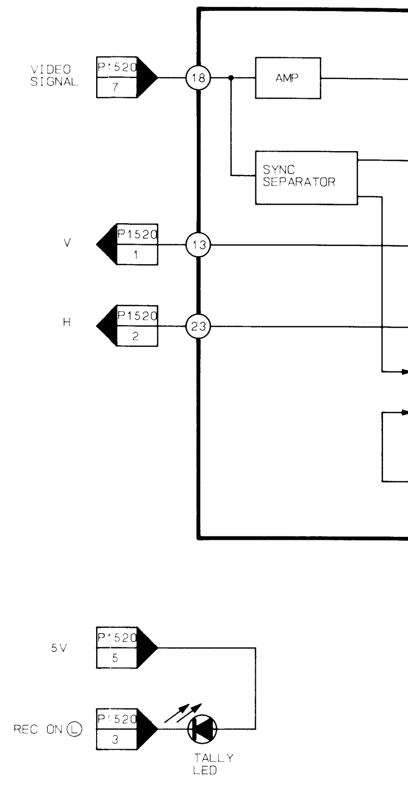
3-3. AUTO FOCUS BLOCK DIAGRAM



DISTANCE ∞
10KHz
IC7-8 LED SIG
IC7-11 CRST(INTEGRATE TIMING)
IC7-13 CLP(CLAMP TIMING)
IC7-7 SYNC REF
IC7-12 ALC/AGC
30MS
10MS
8MS
24MS
2MS
80MS
ALC MODE
AGC MODE
WHITHIN MEASURING DISTANCE
100μS
ALC: AUTOMATIC LIGHT CONTROL.
ACCORDING TO DISTANCE.
INFRARED INTENCITY FROM LED
IS CHANGED.
+3.3V
(H.P.F)
IC2
10KHz
F
IC5
BUFFER
I1+I2
I1-I2
+4V
(AMP)
IC1
PSD
I1
I2
REFLECTED INFRARED
OBJECT
AGC
SYNCHRONISED DET
CLAMP
REG
Q3
BUFFER
IC6
Q17
Q6
REG 5V
VR3
LED DRIVE
ALC
AGC/ALC SW
IC3
(AN2581S)
ALC (H)
ADDED INTEGRATE
REF V
SUBTRACTED INTEGRATE
INFRARED
LED
P4
TP4
TP5
Q4
Q5
10KHz
5Vp-p
WHEN DISTANCE BETWEEN CAMERA AND OBJECT IS LESS THAN 3M, THIS POINT BECAM HIGH
CLAMP PULSE
(COMPARATOR)
IC8
UNREG 12V
Q11
(MOTOR DRIVE)
QR7
QR8
QR9
Q10
REG 5V
F MOTOR -
F MOTOR +
FOCUS MOTOR
P5
LED SIG
AGC/ALC
SYNC REF
CLP
STP
VF
(TIMING PULSE)
FM+
FM-
MOTOR DRIVE
DISTANCE DET
LEVEL DET
LENS POSITION DET
ADC 7
ADC 6
ADC 5
ADC 1
(D/A CONVERTER)
RA1
VR4
D/A ADJ
IC7
(MN1551VXM)
LENS 0 ~LENS 3
LENS 4
LENS 5
LENS ENCORDER(POSITION DET)
MOVING CONTACT
P6
LENS 0
LENS 1
LENS 2
LENS 3
LENS 4
LENS 5
GND
WHEN FOCUS LENS IS TURNED, MOVING CONTACT IS ALSO MOVED BECAUSE MOVING CONTACT IS INTERLOCKED TO FOCUS LENS, AND INFORMATION OF LENS POSITION IS SENT TO IC7.

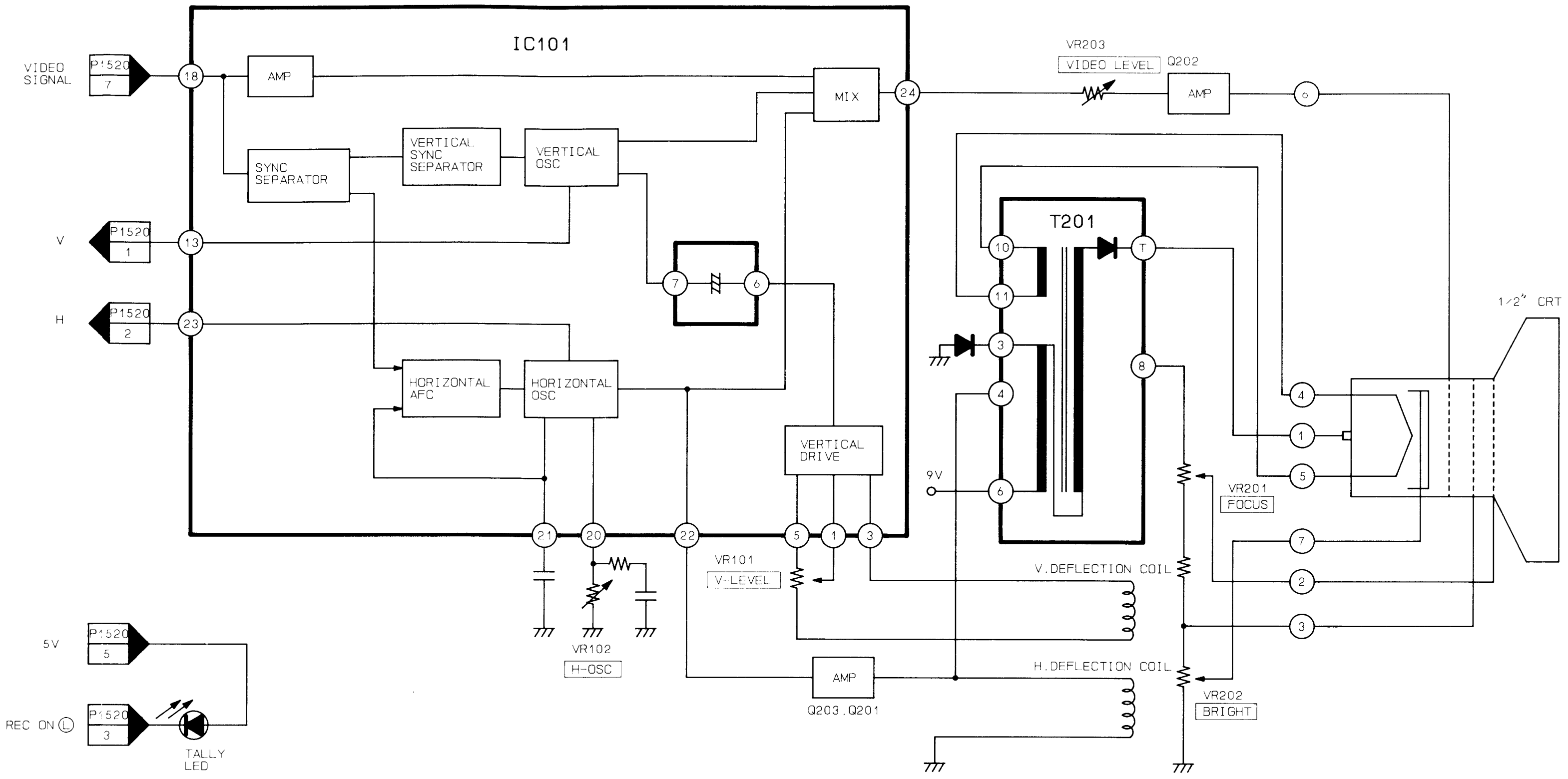
Back Page:
CAMERA PROCESS & DEFLECTION Section

3-4. ELECTRONIC V

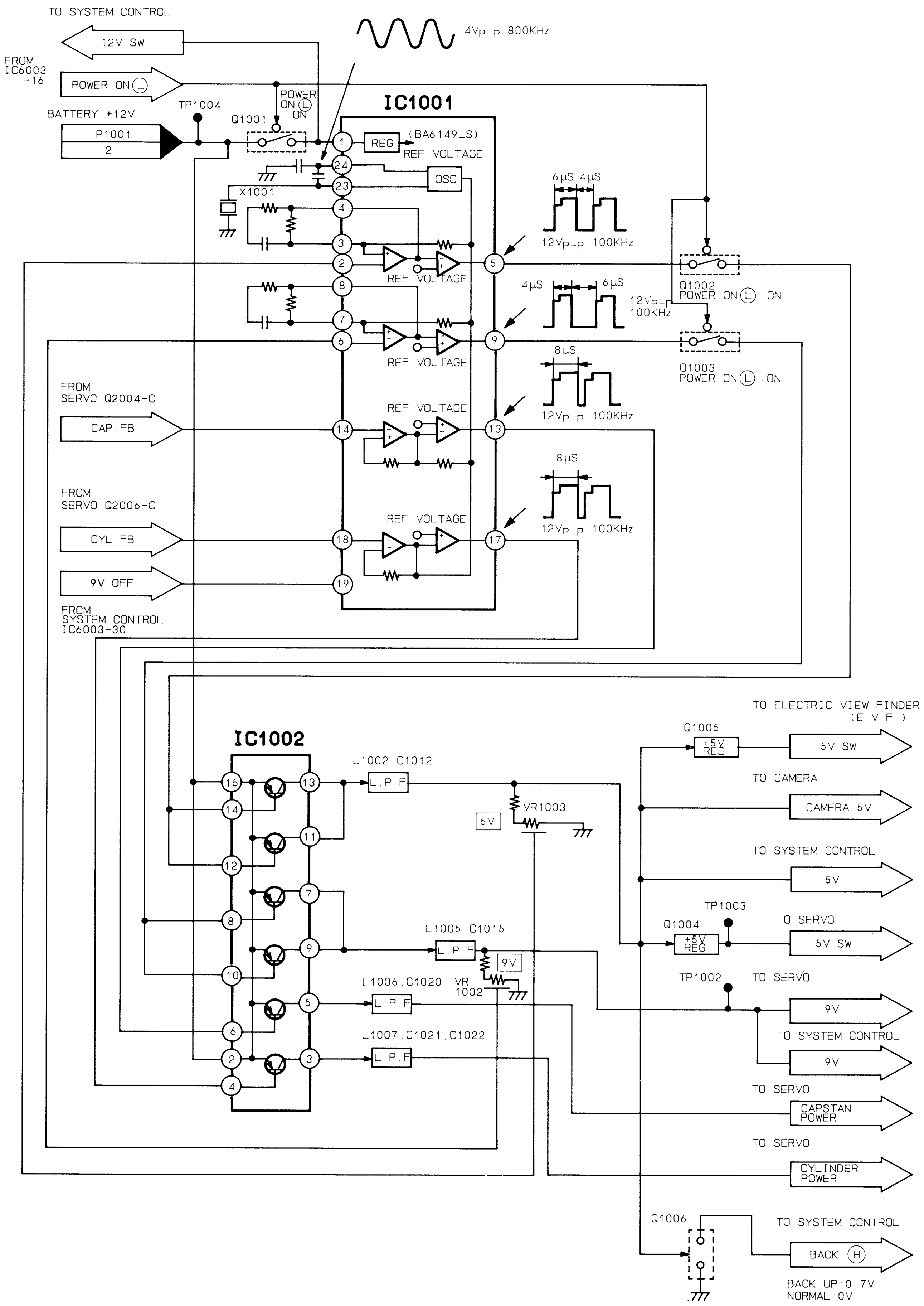


VIDEO SIGNAL
AMP
SYNC SEPARATOR
V
H
5V
REC ON
TALLY LED

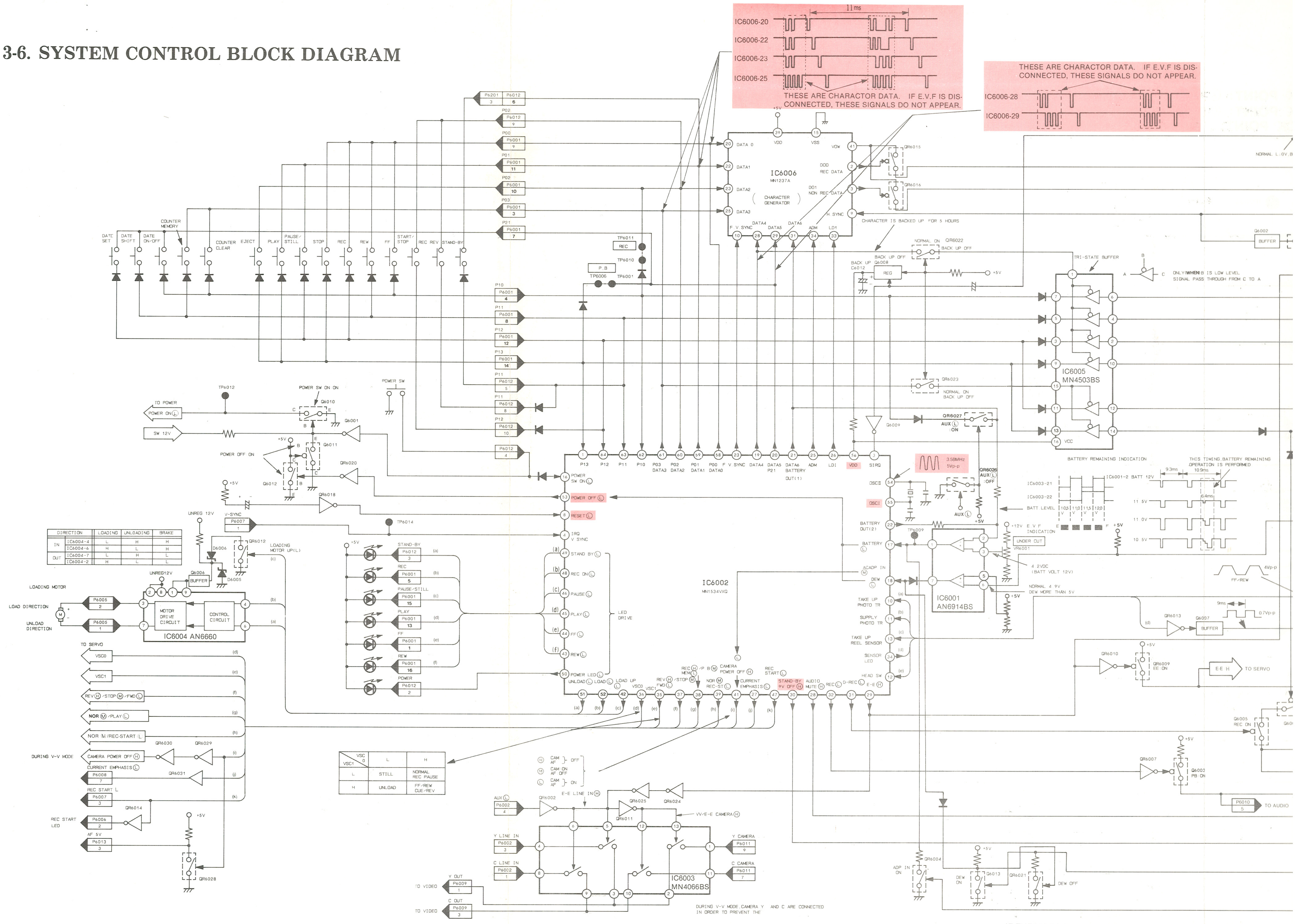
3-4. ELECTRONIC VIEW FINDER (E.V.F) BLOCK DIAGRAM


IC101
VIDEO SIGNAL
P1520 7
V
P1520 1
H
P1520 2
5V
P1520 5
REC ON Ⓛ
P1520 3
TALLY LED
AMP
MIX
SYNC SEPARATOR
VERTICAL SYNC SEPARATOR
VERTICAL OSC
HORIZONTAL AFC
HORIZONTAL OSC
VERTICAL DRIVE
18
13
23
24
21
20
22
5
1
3
7
6
VR101
V-LEVEL
VR102
H-OSC
VR203
VIDEO LEVEL
Q202
AMP
AMP
Q203.Q201
T201
10
11
3
4
6
T
8
9V
V.DEFLECTION COIL
H.DEFLECTION COIL
VR201
FOCUS
VR202
BRIGHT
1/2" CRT

3-5. POWER SUPPLY BLOCK DIAGRAM


TO SYSTEM CONTROL
12V SW
FROM IC6003 -16
POWER ON Ⓛ
BATTERY +12V
P1001 2
TP1004
Q1001
POWER ON Ⓛ ON
4Vp-p 800KHz
IC1001
(BA6149LS)
REG
REF VOLTAGE
OSC
X1001
1
24
23
4
3
2
8
7
6
14
18
19
5
9
13
17
REF VOLTAGE
REF VOLTAGE
REF VOLTAGE
REF VOLTAGE
6μS 4μS
12Vp-p 100KHz
4μS 6μS
12Vp-p 100KHz
8μS
12Vp-p 100KHz
8μS
12Vp-p 100KHz
Q1002
POWER ON Ⓛ : ON
Q1003
POWER ON Ⓛ : ON
FROM SERVO Q2004-C
CAP.FB
FROM SERVO Q2006-C
CYL.FB
9V OFF
FROM SYSTEM CONTROL IC6003-30
IC1002
15
14
12
8
10
6
2
4
13
11
7
9
5
3
L1002.C1012
L.P.F
VR1003
5V
L1005 C1015
L.P.F
9V
L1006.C1020
VR 1002
L.P.F
L1007.C1021.C1022
L.P.F
TO ELECTRIC VIEW FINDER (E.V.F.)
Q1005
+5V REG
5V SW
TO CAMERA
CAMERA 5V
TO SYSTEM CONTROL
5V
TP1003
Q1004
+5V REG
TO SERVO
5V SW
TP1002
TO SERVO
9V
TO SYSTEM CONTROL
9V
TO SERVO
CAPSTAN POWER
TO SERVO
CYLINDER POWER
Q1006
TO SYSTEM CONTROL
BACK Ⓗ
BACK UP : 0.7V
NORMAL : 0V

3-6. SYSTEM CONTROL BLOCK DIAGRAM


11ms
IC6006-20
IC6006-22
IC6006-23
IC6006-25
IC6006-28
IC6006-29
IC6006
MN1237A
CHARACTER GENERATOR
DATA 0
DATA1
DATA2
DATA3
VDD
VSS
VDW
DDD REC DATA
DD1 NON REC DATA
H SYNC
F V SYNC
DATA4
DATA5
DATA6
ADM
LD1
CHARACTER IS BACKED UP FOR 5 HOURS
QR6015
QR6016
QR6022
NORMAL ON
BACK UP OFF
BACK UP Q6008
C6012
REG
TRI-STATE BUFFER
ONLY WHEN B IS LOW LEVEL SIGNAL PASS THROUGH FROM C TO A
IC6005
MN4503BS
VCC
QR6023
QR6027
AUX Ⓛ :ON
Q6009
Q6002
BUFFER
NORMAL L OV.B
DATE SET
DATE SHIFT
DATE ON/OFF
COUNTER MEMORY
COUNTER CLEAR
EJECT
PLAY
PAUSE/STILL
STOP
REC
REW
FF
START/STOP
REC REV
STAND-BY
TP6011
REC
TP6010
P.B
TP6006
TP6001
P6201
P6012
P6001
P00
P01
P02
P03
P10
P11
P12
P13
P21
TO POWER
POWER ON Ⓛ
SW 12V
TP6012
POWER SW ON ON
Q6010
Q6001
POWER SW
POWER OFF ON
Q6011
Q6012
QR6020
QR6018
UNREG 12V
V-SYNC
P6007
TP6014
LOADING MOTOR UP (L)
QR6012
D6006
D6005
Q6006
BUFFER
UNREG12V
LOADING MOTOR
LOAD DIRECTION
UNLOAD DIRECTION
P6005
MOTOR DRIVE CIRCUIT
CONTROL CIRCUIT
IC6004 AN6660
TO SERVO
VSC0
VSC1
REV Ⓗ/STOP Ⓜ/FWD Ⓛ
NOR Ⓜ/PLAY Ⓛ
NOR Ⓜ/REC START Ⓛ
DURING V-V MODE
CAMERA POWER OFF Ⓗ
CURRENT EMPHASIS Ⓛ
QR6030
QR6029
QR6031
P6008
REC START Ⓛ
QR6014
REC START LED
P6006
AF 5V
P6013
QR6028
STAND-BY
REC
PAUSE-STILL
PLAY
FF
REW
POWER
P6012
P6001
P13
P12
P11
P10
P03 DATA3
P02 DATA2
P01 DATA1
P00 DATA0
F V SYNC
DATA4
DATA5 P21
DATA6 BATTERY OUT(1)
ADM
LD1
VDD
SIRQ
3.58MHz 5Vp-p
POWER SW ON Ⓛ
POWER OFF Ⓛ
RESET Ⓛ
IRQ V. SYNC
STAND BY Ⓛ
REC ON Ⓛ
PAUSE Ⓛ
PLAY Ⓛ
FF Ⓛ
REW Ⓛ
LED DRIVE
POWER LED Ⓛ
IC6002
MN1534VXQ
OSCI
OSC2
BATTERY OUT(2)
BATTERY Ⓛ
ACADP IN Ⓜ
DEW Ⓛ
TAKE UP PHOTO TR
SUPPLY PHOTO TR
TAKE UP REEL SENSOR
SENSOR LED
HEAD SW
UNLOAD Ⓛ
LOAD Ⓛ
LOAD UP Ⓛ
VSC0
VSC1
REV Ⓗ/STOP Ⓜ FWD Ⓛ
REC Ⓗ/P.B Ⓜ MEMO
NOR Ⓜ REC-ST Ⓛ
CAMERA POWER OFF Ⓗ
CURRENT EMPHASIS Ⓛ
REC START Ⓛ
STAND-BY 9V OFF Ⓗ
AUDIO MUTE Ⓗ
REC Ⓛ
G-REC Ⓛ
E-E Ⓗ
QR6026
AUX Ⓛ OFF
AUX Ⓛ
+5V
+12V
E.V.F INDICATION
UNDER CUT
VR6001
4.2VDC (BATT VOLT 12V)
NORMAL 4.9V DEW MORE THAN 5V
TP6009
IC6001
AN6914BS
BATTERY REMAINING INDICATION
THIS TIMING BATTERY REMAINING OPERATION IS PERFORMED
IC6001-2 BATT 12V
IC6003-21
IC6003-22
BATT LEVEL
10.5
11.0
11.5
12.0
11.5V
11.0V
10.5V
9.3ms
10.9ms
6.4ms
4Vp-p
FF/REW
9ms
0.7Vp-p
QR6013
Q6007
BUFFER
QR6010
QR6009 EE ON
E-E H
TO SERVO
Q6005 REC ON
QR6007
Q6003 PB ON
P6010
TO AUDIO
CAM AF OFF
CAM ON AF OFF
CAM AF ON
AUX Ⓛ
P6002
QR6002
E-E LINE IN Ⓗ
QR6025
QR6024
QR6011
V/E-E CAMERA Ⓗ
Y LINE IN
C LINE IN
Y CAMERA
C CAMERA
P6011
IC6003
MN4066BS
Y OUT
C OUT
P6009
TO VIDEO
DURING V-V MODE, CAMERA Y AND C ARE CONNECTED IN ORDER TO PREVENT THE
QR6004
ADP IN ON
DEW ON
Q6013
QR6021
DEW OFF

THESE ARE CHARACTOR DATA. IF E.V.F IS DISCONNECTED, THESE SIGNALS DO NOT APPEAR.

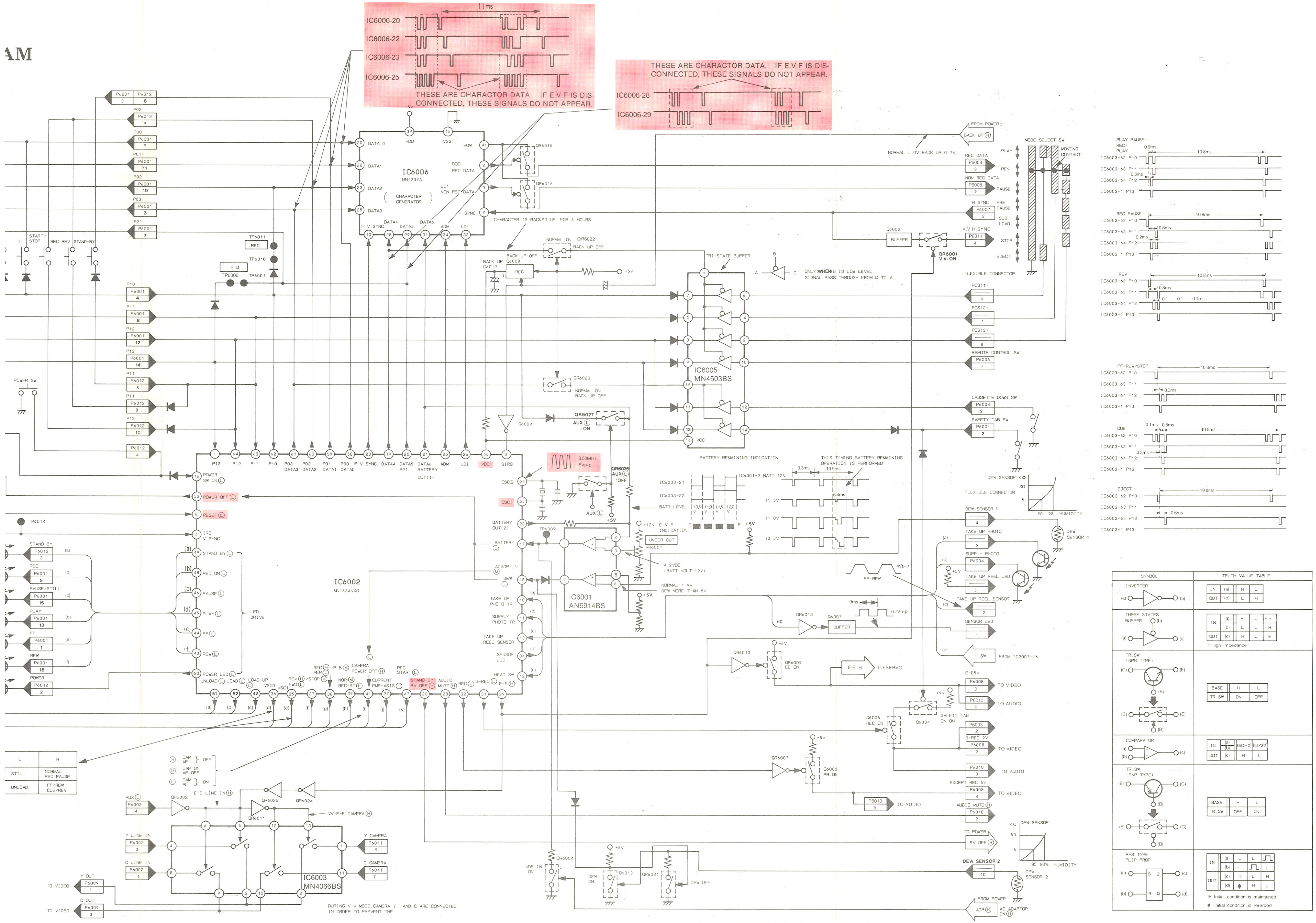
THESE ARE CHARACTOR DATA. IF E.V.F IS DISCONNECTED, THESE SIGNALS DO NOT APPEAR.

DIRECTION		LOADING	UNLOADING	BRAKE
IN	IC6004-4	L	H	H
	IC6004-6	H	L	H
OUT	IC6004-7	L	H	L
	IC6004-2	H	L	L

VSC1 \ VSC0	L	H
L	STILL	NORMAL REC PAUSE
H	UNLOAD	FF/REW CUE/REV

IF THE VIDEO TAPE RECORDER DOSEN'T WORK IN ANY MODES, CHECK THE PARTS MARKED ▨ IN THE ILLUSTRATION.

AM

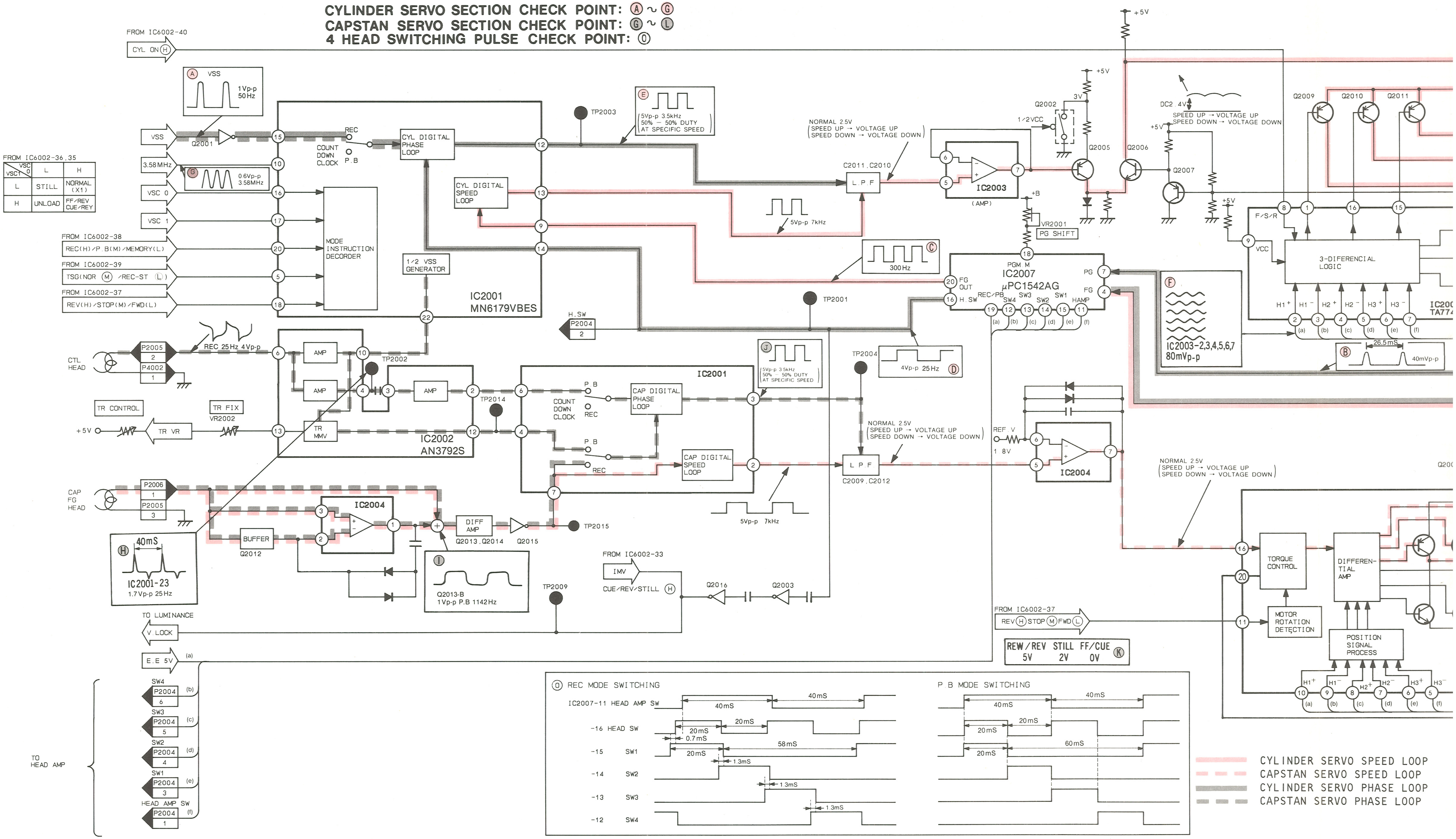

IC6006-20
IC6006-22
IC6006-23
IC6006-25
11ms
THESE ARE CHARACTOR DATA. IF E.V.F IS DISCONNECTED, THESE SIGNALS DO NOT APPEAR.
IC6006-28
IC6006-29
IC6006
MN1237A
CHARACTER GENERATOR
CHARACTER IS BACKED UP FOR 5 HOURS
QR6015
QR6016
QR6022
QR6023
QR6027
QR6026
QR6001 V.V ON
Q6002 BUFFER
TRI-STATE BUFFER
ONLY WHEN B IS LOW LEVEL SIGNAL PASS THROUGH FROM C TO A
IC6005
MN4503BS
FROM POWER
BACK UP
NORMAL L:0V, BACK UP 0.7V
REC DATA
NON REC DATA
H SYNC
V.V H SYNC
FLEXIBLE CONNECTOR
POS(1)
POS(2)
POS(3)
REMOTE CONTROL SW
CASSETTE DOWN SW
SAFETY TAB SW
MODE SELECT SW
MOVING CONTACT
PLAY
REV
PAUSE
PRE PAUSE
SUB LOAD
STOP
EJECT
PLAY PAUSE/REC/PLAY
REC PAUSE
REV
FF/REW/STOP
CUE
EJECT
10.8ms
IC6003-62 P10
IC6003-63 P11
IC6003-64 P12
IC6003-1 P13
BATTERY REMAINING INDICATION
THIS TIMING BATTERY REMAINING OPERATION IS PERFORMED
IC6003-21
IC6003-22
BATT LEVEL
IC6001-2 BATT 12V
11.5V
11.0V
10.5V
3.58MHz 5Vp-p
IC6002
MN1534VXQ
IC6001
AN6914BS
E.V.F INDICATION
UNDER CUT
VR6001
BATT VOLT 12V
DEW MORE THAN 5V
POWER SW ON
POWER OFF
RESET
IRQ V SYNC
STAND BY
REC ON
PAUSE
PLAY
FF
REW
POWER LED
LED DRIVE
TAKE UP PHOTO TR
SUPPLY PHOTO TR
TAKE UP REEL SENSOR
SENSOR LED
HEAD SW
STAND-BY
REC
PAUSE/STILL
PLAY
FF
REW
POWER
POWER SW
START/STOP
REC REV
TP6014
TP6011
TP6010
TP6006
TP6001
DEW SENSOR 1
DEW SENSOR 2
TAKE UP PHOTO
SUPPLY PHOTO
TAKE UP REEL LED
TAKE UP REEL SENSOR
SENSOR LED
H SW FROM IC2007-16
QR6013
Q6007 BUFFER
QR6010
QR6009 EE ON
E E H TO SERVO
TO VIDEO
TO AUDIO
SAFETY TAB ON ON
Q6005 REC ON
Q6004
D-REC 9V
QR6007
Q6003 PB ON
EXCEPT REC 5V
AUDIO MUTE
TO POWER 9V OFF
FROM POWER ADP
AC ADAPTOR IN
HUMIDITY
QR6002
QR6025
QR6024
QR6011
E-E LINE IN
VV/E-E CAMERA
Y LINE IN
C LINE IN
Y CAMERA
C CAMERA
Y OUT
C OUT
TO VIDEO
IC6003
MN4066BS
DURING V-V MODE, CAMERA Y AND C ARE CONNECTED IN ORDER TO PREVENT THE
QR6004
Q6013
QR6021
DEW ON
DEW OFF
ADP IN ON
STILL
UNLOAD
NORMAL REC PAUSE
FF/REW CUE/REV
SYMBOL
TRUTH VALUE TABLE
INVERTER
THREE STATES BUFFER
TR SW (NPN TYPE)
COMPARATOR
TR SW (PNP TYPE)
R-S TYPE FLIP-FROP
High Impedance
Initial condition is maintained
Initial condition is rerersed

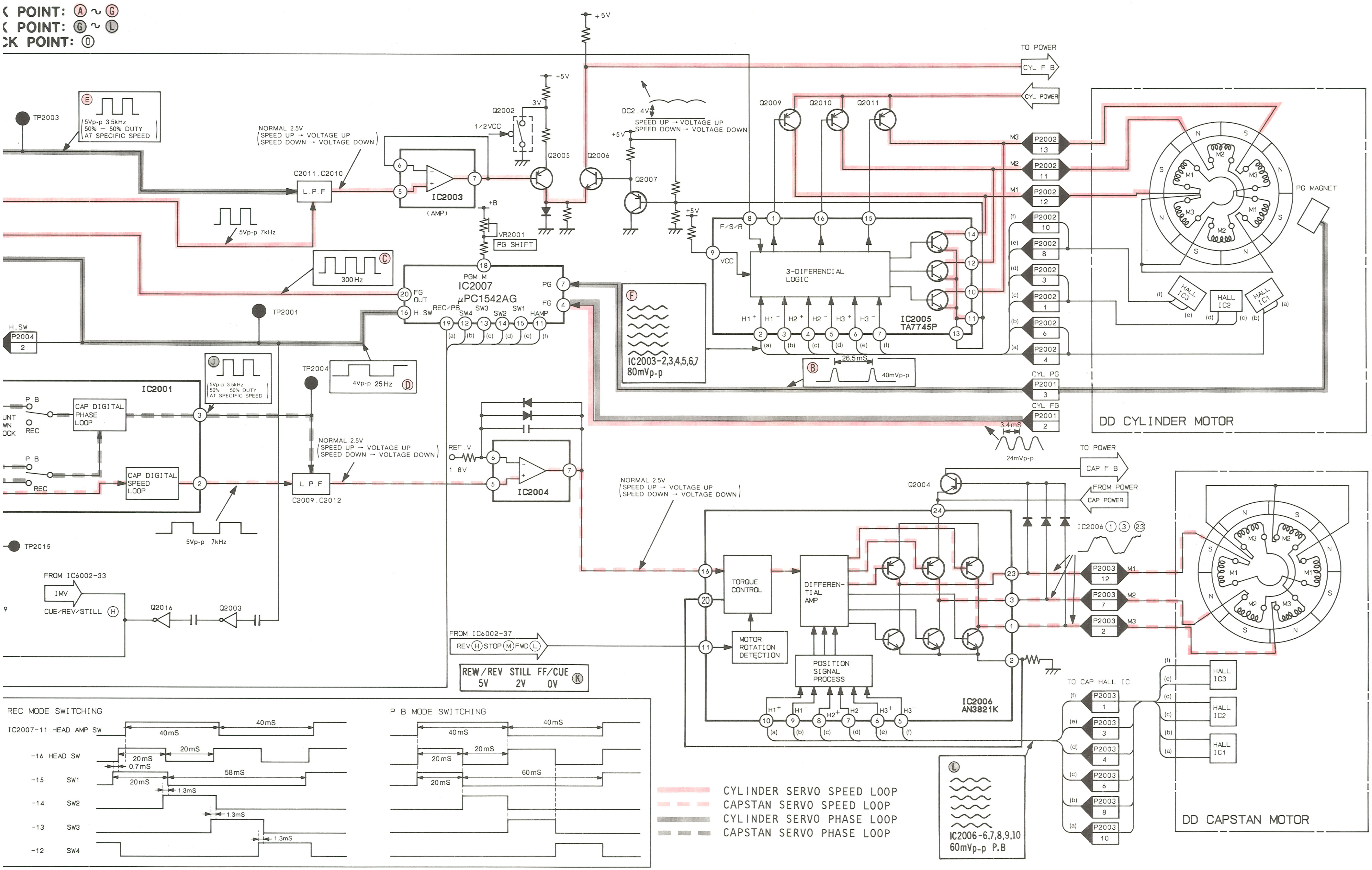
IF THE VIDEO TAPE RECORDER DOESN'T WORK IN ANY MODES, CHECK THE PARTS MARKED ▨ IN THE ILLUSTRATION.

Next Page: SERVO Section

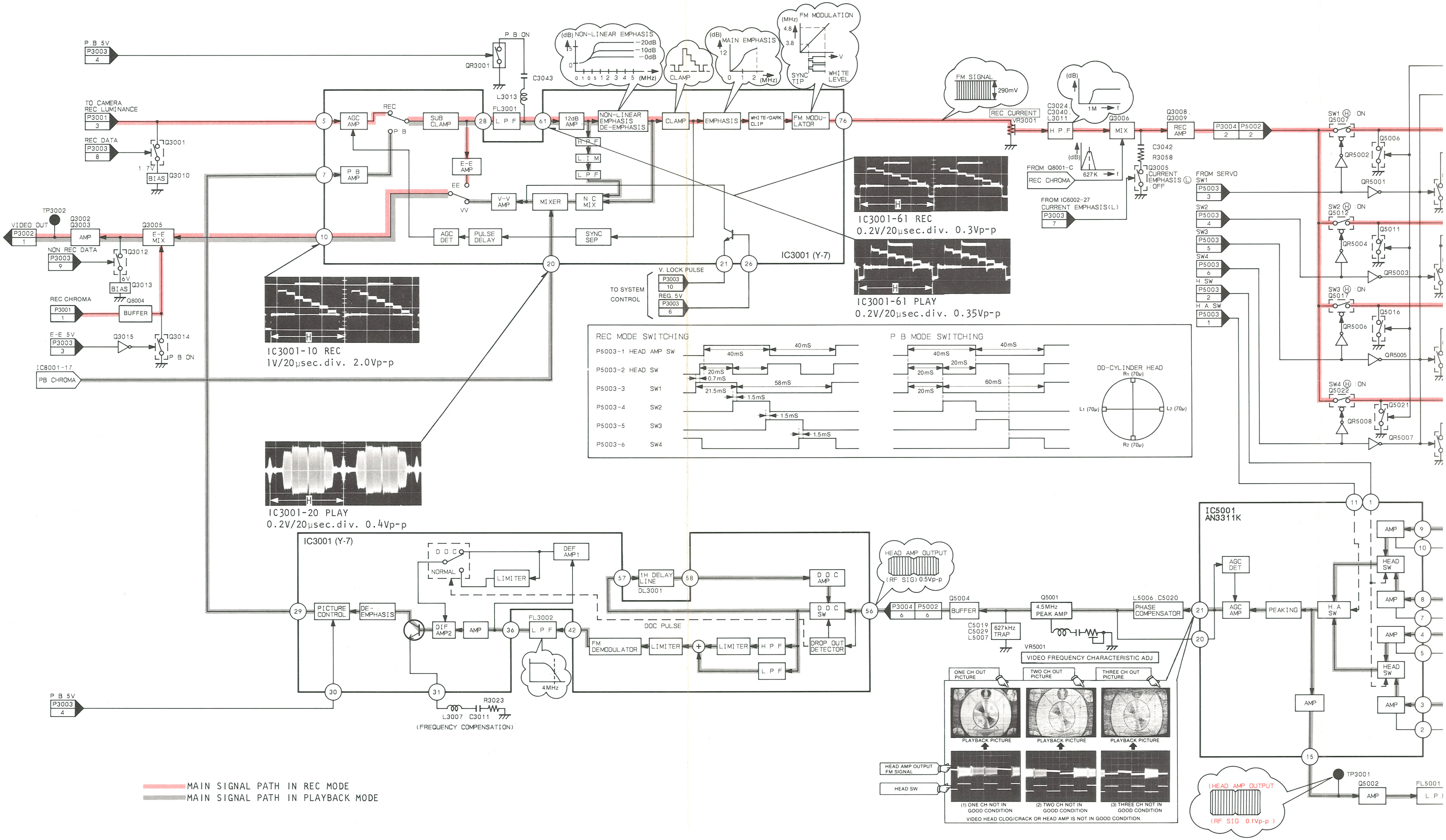
3-7. SERVO BLOCK DIAGRAM

CYLINDER SERVO SECTION CHECK POINT: Ⓐ ~ Ⓖ
CAPSTAN SERVO SECTION CHECK POINT: Ⓖ ~ Ⓛ
4 HEAD SWITCHING PULSE CHECK POINT: Ⓞ

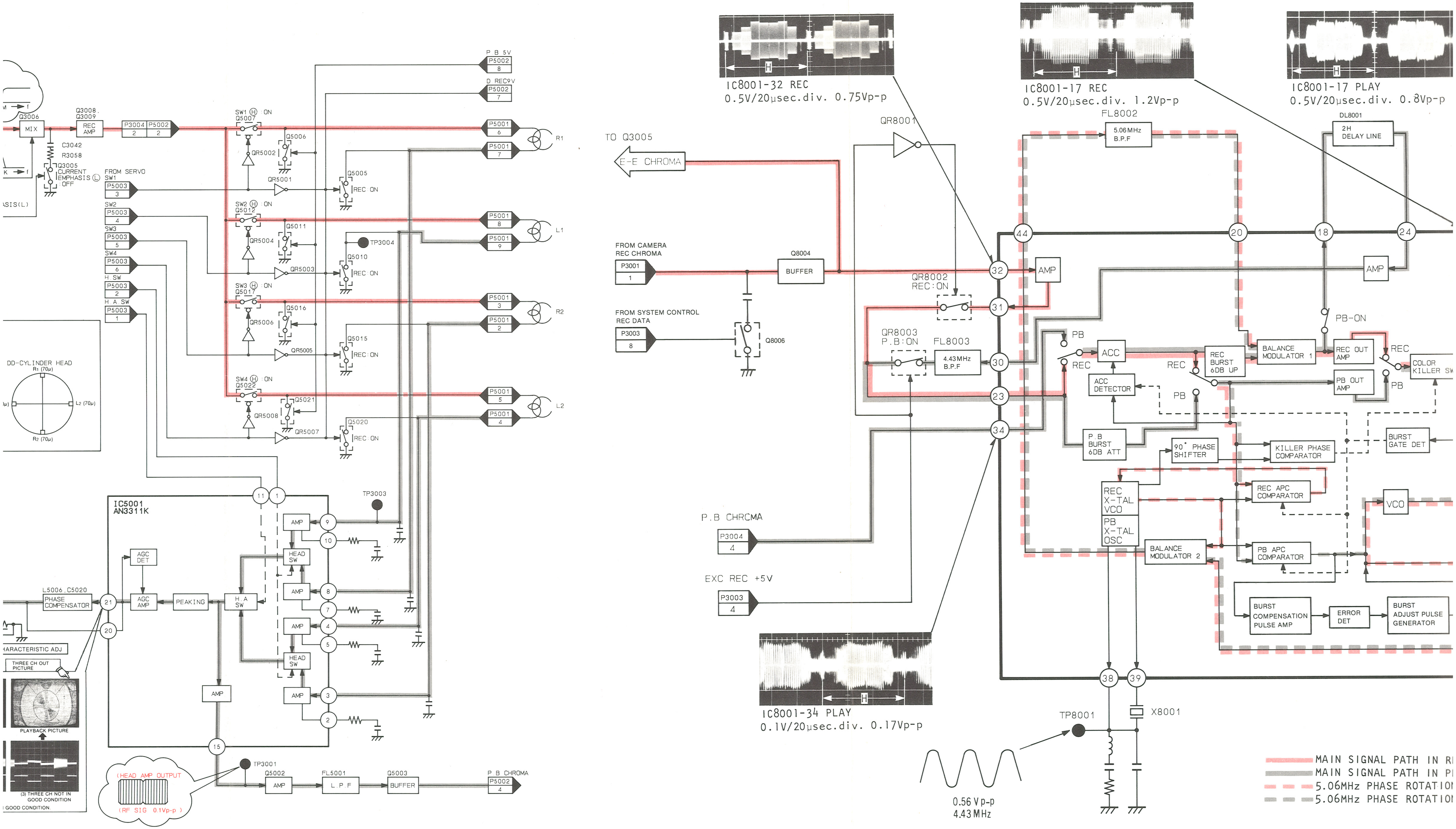

FROM IC6002-40
CYL ON Ⓗ
Ⓐ VSS 1Vp-p 50Hz
VSS
Q2001
REC
COUNT DOWN CLOCK
P.B
CYL DIGITAL PHASE LOOP
CYL DIGITAL SPEED LOOP
Ⓔ 5Vp-p 3.5kHz 50% — 50% DUTY AT SPECIFIC SPEED
TP2003
3.58MHz
Ⓖ 0.6Vp-p 3.58MHz
VSC 0
VSC 1
FROM IC6002-36,35
VSC1 \ VSC0 | L | H
L | STILL | NORMAL (X1)
H | UNLOAD | FF/REV CUE/REV
FROM IC6002-38
REC(H)/P.B(M)/MEMORY(L)
FROM IC6002-39
TSG(NOR Ⓜ /REC-ST Ⓛ)
FROM IC6002-37
REV(H)/STOP(M)/FWD(L)
MODE INSTRUCTION DECORDER
1/2 VSS GENERATOR
IC2001 MN6179VBES
5Vp-p 7kHz
NORMAL 2.5V (SPEED UP → VOLTAGE UP / SPEED DOWN → VOLTAGE DOWN)
C2011, C2010
L P F
IC2003 (AMP)
Ⓒ 300Hz
+5V
3V
Q2002
1/2VCC
Q2005
Q2006
Q2007
DC2 4V
SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN
+B
VR2001 PG SHIFT
PGM M
IC2007 µPC1542AG
FG OUT
H SW
REC/PB
SW4 SW3 SW2 SW1
HAMP
PG
FG
TP2001
H.SW P2004 2
Q2009 Q2010 Q2011
F/S/R
VCC
3-DIFERENCIAL LOGIC
H1+ H1− H2+ H2− H3+ H3−
IC200 TA77
Ⓕ IC2003-2,3,4,5,6,7 80mVp-p
Ⓑ 26.5mS 40mVp-p
REC 25Hz 4Vp-p
CTL HEAD
P2005 2
P4002 1
AMP
TP2002
TP2014
TR CONTROL
TR FIX VR2002
+5V
TR VR
TR MMV
IC2002 AN3792S
IC2001
COUNT DOWN CLOCK
P B
REC
CAP DIGITAL PHASE LOOP
CAP DIGITAL SPEED LOOP
Ⓙ 5Vp-p 3.5kHz 50% — 50% DUTY AT SPECIFIC SPEED
TP2004
Ⓓ 4Vp-p 25Hz
NORMAL 2.5V (SPEED UP → VOLTAGE UP / SPEED DOWN → VOLTAGE DOWN)
L P F C2009, C2012
REF V 1 8V
IC2004
5Vp-p 7kHz
NORMAL 2.5V (SPEED UP → VOLTAGE UP / SPEED DOWN → VOLTAGE DOWN)
CAP FG HEAD
P2006 1
P2005 3
IC2004
BUFFER Q2012
DIFF AMP Q2013, Q2014
Q2015
TP2015
Ⓗ 40mS IC2001-23 1.7Vp-p 25Hz
Ⓘ Q2013-B 1Vp-p P.B 1142Hz
FROM IC6002-33
IMV
CUE/REV/STILL Ⓗ
Q2016 Q2003
TP2009
TO LUMINANCE
V LOCK
E.E 5V
SW4 P2004 6
SW3 P2004 5
SW2 P2004 4
SW1 P2004 3
HEAD AMP SW P2004 1
TO HEAD AMP
FROM IC6002-37
REV Ⓗ STOP Ⓜ FWD Ⓛ
REW/REV 5V | STILL 2V | FF/CUE 0V Ⓚ
TORQUE CONTROL
DIFFEREN-TIAL AMP
MOTOR ROTATION DETECTION
POSITION SIGNAL PROCESS
Ⓞ REC MODE SWITCHING
IC2007-11 HEAD AMP SW
-16 HEAD SW
-15 SW1
-14 SW2
-13 SW3
-12 SW4
40mS 20mS 0.7mS 58mS 1.3mS
P B MODE SWITCHING
40mS 20mS 60mS
CYLINDER SERVO SPEED LOOP
CAPSTAN SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
CAPSTAN SERVO PHASE LOOP


POINT: Ⓐ ~ Ⓖ
POINT: Ⓖ ~ Ⓛ
CK POINT: ⓪
TP2003
Ⓔ 5Vp-p 3.5kHz 50% — 50% DUTY AT SPECIFIC SPEED
NORMAL 2.5V (SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN)
C2011, C2010
LPF
5Vp-p 7kHz
Q2002
1/2VCC
3V
+5V
Q2005
IC2003 (AMP)
+B
VR2001 PG SHIFT
Q2006
Q2007
DC2 4V
SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN
TO POWER
CYL F B
CYL POWER
Q2009
Q2010
Q2011
M3 P2002 13
M2 P2002 11
M1 P2002 12
P2002 10
P2002 8
P2002 3
P2002 1
P2002 6
P2002 4
F/S/R
VCC
3-DIFERENCIAL LOGIC
H1+ H1− H2+ H2− H3+ H3−
IC2005 TA7745P
PG MAGNET
HALL IC1
HALL IC2
HALL IC3
M1 M2 M3
N S
Ⓒ 300Hz
PGM M
IC2007 μPC1542AG
FG OUT
H SW
REC/PB
SW4 SW3 SW2 SW1
HAMP
PG
FG
TP2001
H.SW P2004 2
Ⓕ IC2003-2,3,4,5,6,7 80mVp-p
Ⓑ 26.5mS 40mVp-p
CYL PG P2001 3
CYL FG P2001 2
3.4mS 24mVp-p
DD CYLINDER MOTOR
TP2004
4Vp-p 25Hz Ⓓ
IC2001
Ⓙ 5Vp-p 3.5kHz 50% — 50% DUTY AT SPECIFIC SPEED
P B
REC
CAP DIGITAL PHASE LOOP
CAP DIGITAL SPEED LOOP
NORMAL 2.5V (SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN)
C2009, C2012
REF V
1.8V
IC2004
5Vp-p 7kHz
TP2015
FROM IC6002-33
IMV
CUE/REV/STILL Ⓗ
Q2016
Q2003
NORMAL 2.5V (SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN)
TO POWER
CAP F B
FROM POWER
CAP POWER
Q2004
IC2006 ① ③ ㉓
TORQUE CONTROL
DIFFEREN-TIAL AMP
MOTOR ROTATION DETECTION
POSITION SIGNAL PROCESS
IC2006 AN3821K
P2003 12 M1
P2003 7 M2
P2003 2 M3
FROM IC6002-37
REV Ⓗ STOP Ⓜ FWD Ⓛ
REW/REV 5V
STILL 2V
FF/CUE 0V
Ⓚ
TO CAP HALL IC
P2003 1
P2003 3
P2003 4
P2003 6
P2003 8
P2003 10
HALL IC3
HALL IC2
HALL IC1
DD CAPSTAN MOTOR
Ⓛ IC2006-6,7,8,9,10 60mVp-p P.B
REC MODE SWITCHING
IC2007-11 HEAD AMP SW
-16 HEAD SW
-15 SW1
-14 SW2
-13 SW3
-12 SW4
40mS
20mS
0.7mS
58mS
1.3mS
P B MODE SWITCHING
60mS
CYLINDER SERVO SPEED LOOP
CAPSTAN SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
CAPSTAN SERVO PHASE LOOP

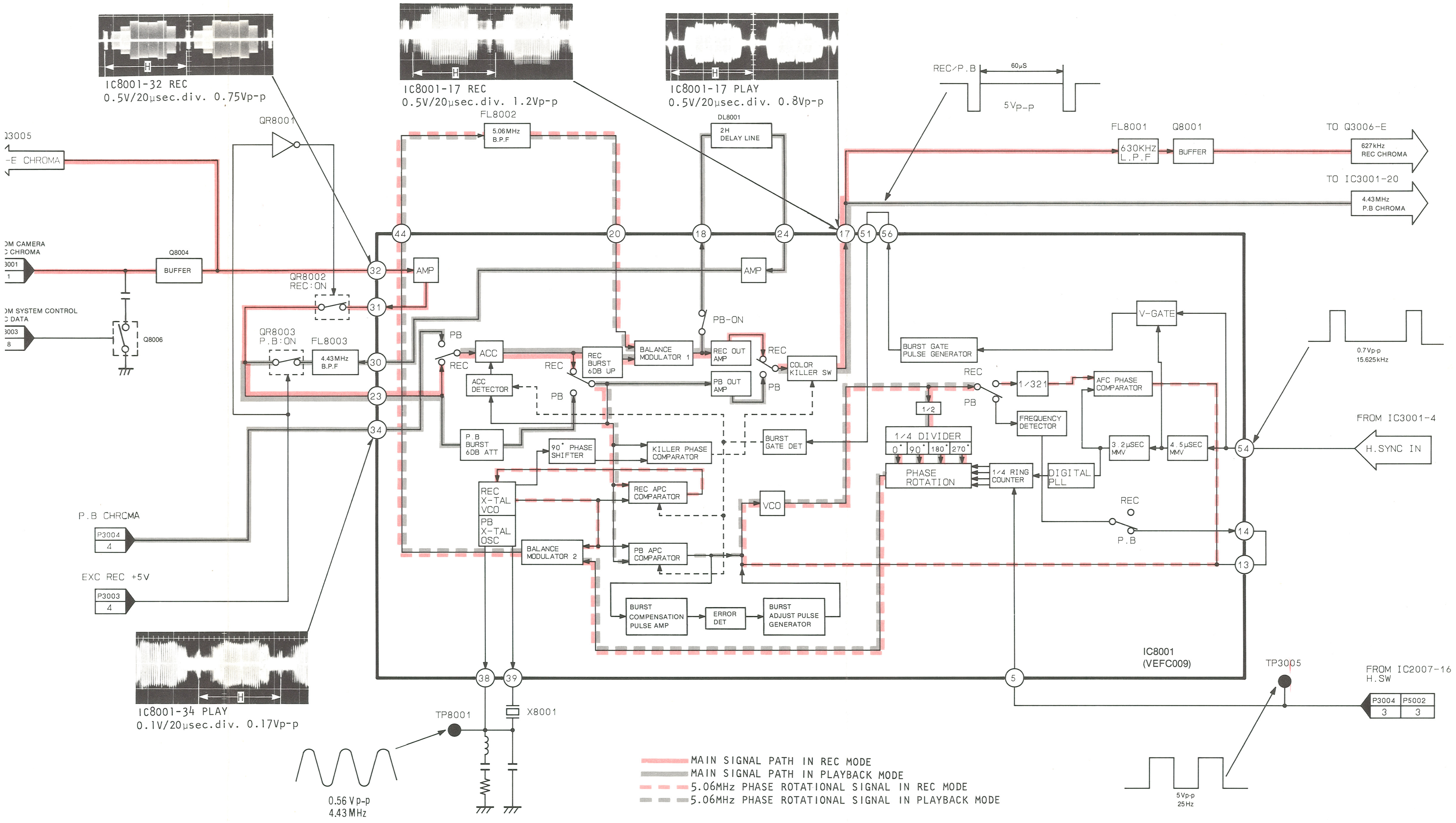
3-8. LUMINANCE PROCESS BLOCK DIAGRAM


P B 5V
P3003 4
P B ON
QR3001
C3043
L3013
TO CAMERA REC LUMINANCE
P3001 3
REC DATA
P3003 8
Q3001
1.7V
BIAS
Q3010
(dB) NON-LINEAR EMPHASIS
-20dB
-10dB
-0dB
0.1 0.5 1 2 3 4 5 (MHz)
CLAMP
(dB) MAIN EMPHASIS
12
0 1 2 (MHz)
(MHz) FM MODULATION
4.8
3.8
V
SYNC TIP
WHITE LEVEL
FM SIGNAL
290mV
(dB)
1M
f
AGC AMP
REC
P B
SUB CLAMP
FL3001
L P F
12dB AMP
NON-LINEAR EMPHASIS DE-EMPHASIS
EMPHASIS
WHITE/DARK CLIP
FM MODU-LATOR
H P F
L I M
L P F
E-E AMP
P B AMP
EE
VV
V-V AMP
MIXER
N C MIX
AGC DET
PULSE DELAY
SYNC SEP
IC3001 (Y-7)
5
7
10
20
21
26
28
61
76
REC CURRENT VR3001
C3024 C3040 L3011
H P F
Q3006
MIX
Q3008 Q3009
REC AMP
P3004 2
P5002 2
C3042
R3058
(dB)
627K
f
FROM Q8001-C
REC CHROMA
Q3005
CURRENT EMPHASIS Ⓛ OFF
FROM IC6002-27
CURRENT EMPHASIS(L)
P3003 7
TP3002
VIDEO OUT
P3002 1
Q3002 Q3003
AMP
Q3005
E-E MIX
NON REC DATA
P3003 9
Q3012
6V
BIAS
Q3013
Q8004
REC CHROMA
P3001 1
BUFFER
E-E 5V
P3003 3
Q3015
Q3014
P B ON
IC8001-17
PB CHROMA
IC3001-10 REC
1V/20μsec.div. 2.0Vp-p
IC3001-20 PLAY
0.2V/20μsec.div. 0.4Vp-p
IC3001-61 REC
0.2V/20μsec.div. 0.3Vp-p
IC3001-61 PLAY
0.2V/20μsec.div. 0.35Vp-p
H
V. LOCK PULSE
P3003 10
TO SYSTEM CONTROL
REG. 5V
P3003 6
REC MODE SWITCHING
P B MODE SWITCHING
P5003-1 HEAD AMP SW
P5003-2 HEAD SW
P5003-3 SW1
P5003-4 SW2
P5003-5 SW3
P5003-6 SW4
40mS
20mS
0.7mS
21.5mS
58mS
1.5mS
60mS
DD-CYLINDER HEAD
R1 (70μ)
L1 (70μ)
L2 (70μ)
R2 (70μ)
SW1 Ⓗ ON
Q5007
Q5006
QR5002
FROM SERVO
SW1
P5003 3
QR5001
SW2 Ⓗ ON
Q5012
SW2
P5003 4
Q5011
QR5004
SW3
P5003 5
QR5003
SW4
P5003 6
SW3 Ⓗ ON
Q5017
H SW
P5003 2
Q5016
H A SW
P5003 1
QR5006
QR5005
SW4 Ⓗ ON
Q5022
Q5021
QR5008
QR5007
IC3001 (Y-7)
D O C
NORMAL
LIMITER
DEF AMP1
1H DELAY LINE
DL3001
D O C AMP
D O C SW
DROP OUT DETECTOR
DOC PULSE
PICTURE CONTROL
DE-EMPHASIS
DIF AMP2
AMP
FL3002
L P F
FM DEMODULATOR
LIMITER
LIMITER
H P F
L P F
4MHz
29
30
31
36
42
56
57
58
R3023
L3007 C3011
(FREQUENCY COMPENSATION)
P B 5V
P3003 4
HEAD AMP OUTPUT
(RF SIG) 0.5Vp-p
P3004 6
P5002 6
Q5004
BUFFER
Q5001
4.5MHz PEAK AMP
C5019 C5029 L5007
627kHz TRAP
VR5001
VIDEO FREQUENCY CHARACTERISTIC ADJ
L5006, C5020
PHASE COMPENSATOR
IC5001 AN3311K
AMP
HEAD SW
AGC DET
AGC AMP
PEAKING
H A SW
AMP
HEAD SW
AMP
AMP
AMP
9
10
8
7
4
5
3
2
11
1
21
20
15
ONE CH OUT PICTURE
TWO CH OUT PICTURE
THREE CH OUT PICTURE
PLAYBACK PICTURE
HEAD AMP OUTPUT FM SIGNAL
HEAD SW
(1) ONE CH NOT IN GOOD CONDITION
(2) TWO CH NOT IN GOOD CONDITION
(3) THREE CH NOT IN GOOD CONDITION
VIDEO HEAD CLOG/CRACK OR HEAD AMP IS NOT IN GOOD CONDITION.
TP3001
Q5002
AMP
FL5001
L P
(HEAD AMP OUTPUT
(RF SIG 0.1Vp-p)
MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE

3-9. CHROMINANCE PROCESS BLOCK DIAGRAM


Q3006
MIX
Q3008, Q3009
REC AMP
C3042
R3058
Q3005
CURRENT EMPHASIS Ⓛ :OFF
ASIS(L)
P3004 2
P5002 2
FROM SERVO
SW1 P5003 3
SW2 P5003 4
SW3 P5003 5
SW4 P5003 6
H. SW P5003 2
H. A. SW P5003 1
P. B 5V P5002 8
D. REC9V P5002 7
SW1 Ⓗ :ON Q5007
Q5006
QR5002
QR5001
Q5005 REC: ON
SW2 Ⓗ :ON Q5012
Q5011
QR5004
TP3004
Q5010 REC: ON
QR5003
SW3 Ⓗ :ON Q5017
Q5016
QR5006
Q5015 REC: ON
QR5005
SW4 Ⓗ :ON Q5022
Q5021
QR5008
QR5007
Q5020 REC: ON
P5001 6
P5001 7
R1
P5001 8
P5001 9
L1
P5001 3
P5001 2
R2
P5001 5
P5001 4
L2
DD-CYLINDER HEAD
R1 (70μ)
L2 (70μ)
R2 (70μ)
IC5001 AN3311K
11
1
AMP
9
10
HEAD SW
AMP
8
7
AMP
4
5
HEAD SW
AMP
3
2
TP3003
AGC DET
AGC AMP
PEAKING
H. A SW
AMP
21
20
15
L5006, C5020
PHASE COMPENSATOR
HARACTERISTIC ADJ
THREE CH OUT PICTURE
PLAYBACK PICTURE
(3) THREE CH NOT IN GOOD CONDITION
GOOD CONDITION.
(HEAD AMP OUTPUT
(RF SIG 0.1Vp-p)
TP3001
Q5002 AMP
FL5001 L. P. F
Q5003 BUFFER
P. B CHROMA P5002 4
IC8001-32 REC
0.5V/20μsec.div. 0.75Vp-p
IC8001-17 REC
0.5V/20μsec.div. 1.2Vp-p
IC8001-17 PLAY
0.5V/20μsec.div. 0.8Vp-p
H
TO Q3005
E-E CHROMA
QR8001
FL8002
5.06MHz B.P.F
DL8001
2H DELAY LINE
44
20
18
24
FROM CAMERA REC CHROMA
P3001 1
Q8004
BUFFER
32
AMP
AMP
QR8002 REC: ON
31
FROM SYSTEM CONTROL REC DATA
P3003 8
Q8006
QR8003 P. B: ON
FL8003
4.43MHz B.P.F
30
23
34
PB-ON
PB
REC
ACC
ACC DETECTOR
REC
REC BURST 6DB UP
BALANCE MODULATOR 1
REC OUT AMP
REC
COLOR KILLER SW
PB OUT AMP
PB
PB
P. B BURST 6DB ATT
90° PHASE SHIFTER
KILLER PHASE COMPARATOR
BURST GATE DET
REC X-TAL VCO
PB X-TAL OSC
REC APC COMPARATOR
VCO
BALANCE MODULATOR 2
PB APC COMPARATOR
BURST COMPENSATION PULSE AMP
ERROR DET
BURST ADJUST PULSE GENERATOR
P. B CHRCMA
P3004 4
EXC REC +5V
P3003 4
IC8001-34 PLAY
0.1V/20μsec.div. 0.17Vp-p
38
39
TP8001
X8001
0.56 Vp-p
4.43 MHz
MAIN SIGNAL PATH IN R
MAIN SIGNAL PATH IN P
5.06MHz PHASE ROTATIO
5.06MHz PHASE ROTATIO

. CHROMINANCE PROCESS BLOCK DIAGRAM


IC8001-32 REC
0.5V/20μsec.div. 0.75Vp-p
IC8001-17 REC
0.5V/20μsec.div. 1.2Vp-p
IC8001-17 PLAY
0.5V/20μsec.div. 0.8Vp-p
REC/P.B
60μS
5Vp-p
H
FL8002
5.06MHz B.P.F
DL8001
2H DELAY LINE
FL8001
Q8001
630KHZ L.P.F
BUFFER
TO Q3006-E
627kHz REC CHROMA
TO IC3001-20
4.43MHz P.B CHROMA
Q3005
-E CHROMA
QR8001
M CAMERA
C CHROMA
3001
1
Q8004
BUFFER
QR8002
REC:ON
M SYSTEM CONTROL
C DATA
3003
8
Q8006
QR8003
P.B:ON
FL8003
4.43MHz B.P.F
44
20
18
24
17
51
56
32
31
30
23
34
AMP
AMP
PB-ON
PB
REC
ACC
ACC DETECTOR
REC
REC BURST 6DB UP
BALANCE MODULATOR 1
REC OUT AMP
REC
COLOR KILLER SW
PB OUT AMP
PB
PB
P.B BURST 6DB ATT
90° PHASE SHIFTER
KILLER PHASE COMPARATOR
BURST GATE DET
BURST GATE PULSE GENERATOR
V-GATE
0.7Vp-p
15.625kHz
REC
PB
1/321
AFC PHASE COMPARATOR
1/2
FREQUENCY DETECTOR
1/4 DIVIDER
0°
90°
180°
270°
PHASE ROTATION
1/4 RING COUNTER
DIGITAL PLL
3.2μSEC MMV
4.5μSEC MMV
54
FROM IC3001-4
H.SYNC IN
REC X-TAL VCO
PB X-TAL OSC
REC APC COMPARATOR
VCO
REC
P.B
14
13
P.B CHRCMA
P3004
4
BALANCE MODULATOR 2
PB APC COMPARATOR
EXC REC +5V
P3003
4
BURST COMPENSATION PULSE AMP
ERROR DET
BURST ADJUST PULSE GENERATOR
IC8001
(VEFC009)
TP3005
FROM IC2007-16
H.SW
P3004
P5002
3
3
38
39
5
IC8001-34 PLAY
0.1V/20μsec.div. 0.17Vp-p
TP8001
X8001
0.56Vp-p
4.43MHz
MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
5.06MHz PHASE ROTATIONAL SIGNAL IN REC MODE
5.06MHz PHASE ROTATIONAL SIGNAL IN PLAYBACK MODE
5Vp-p
25Hz

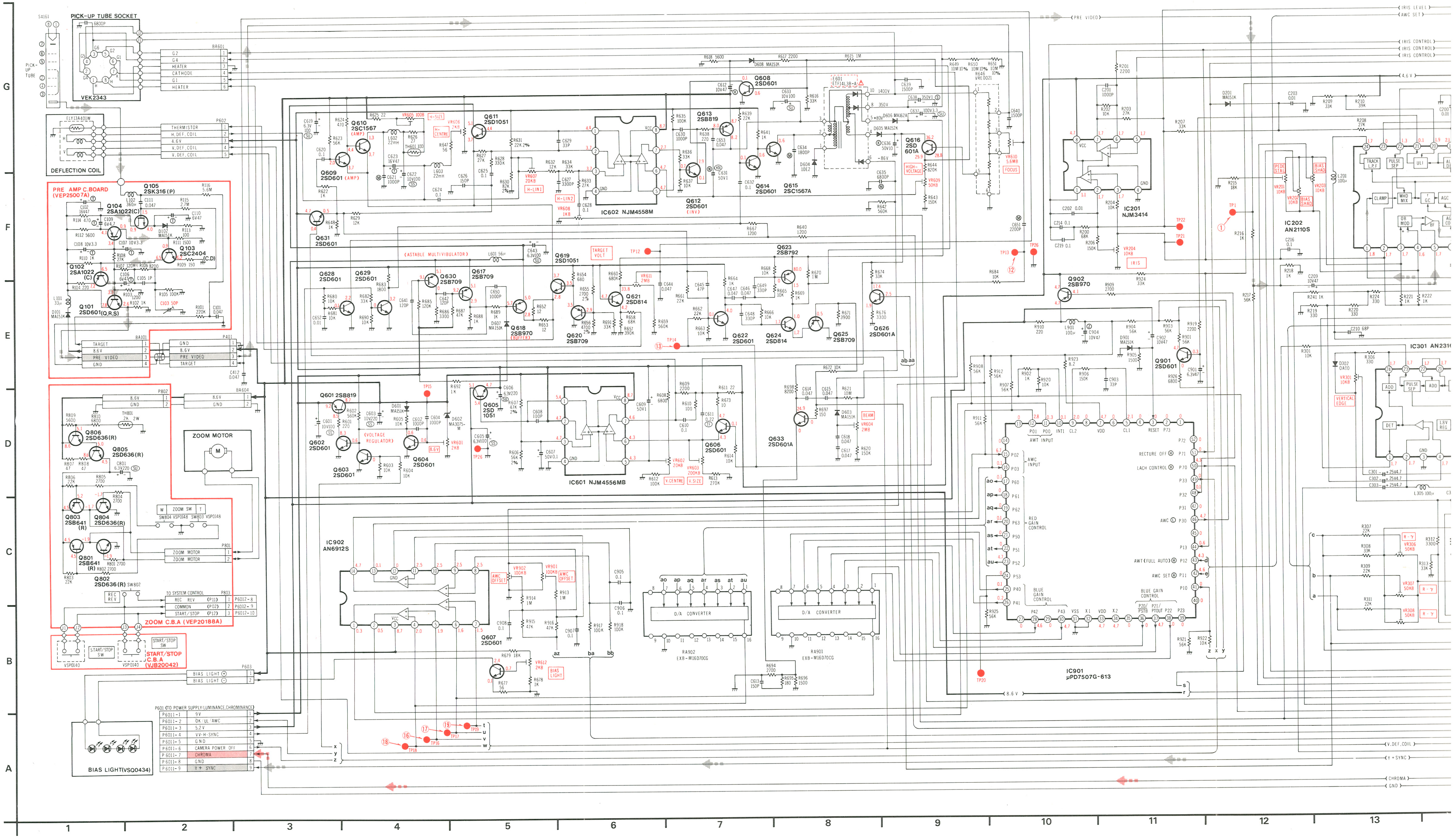
Next Page:
CAMERA Section

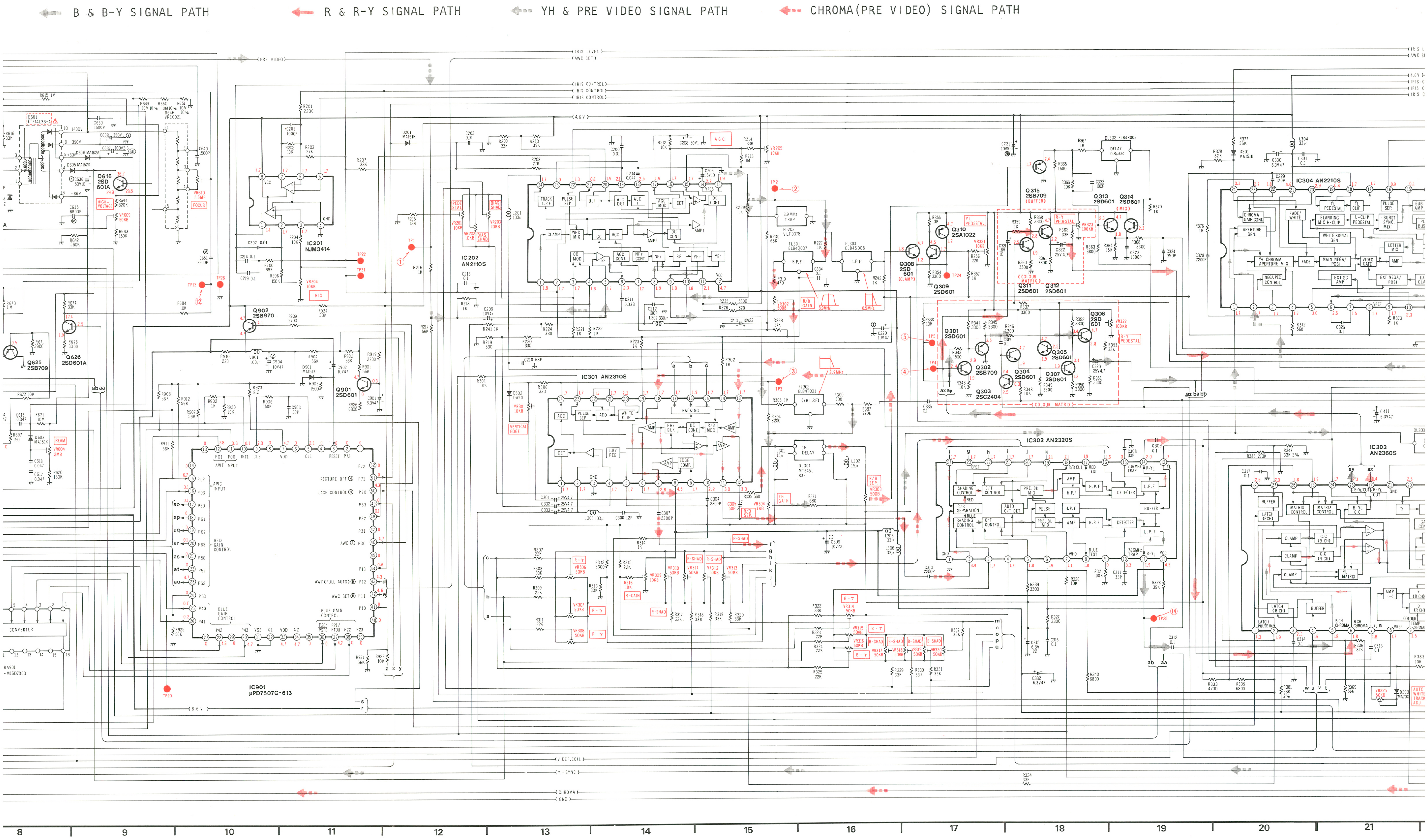
3-10. CAMERA SCHEMATIC DIAGRAM

B & B-Y SIGNAL PATH

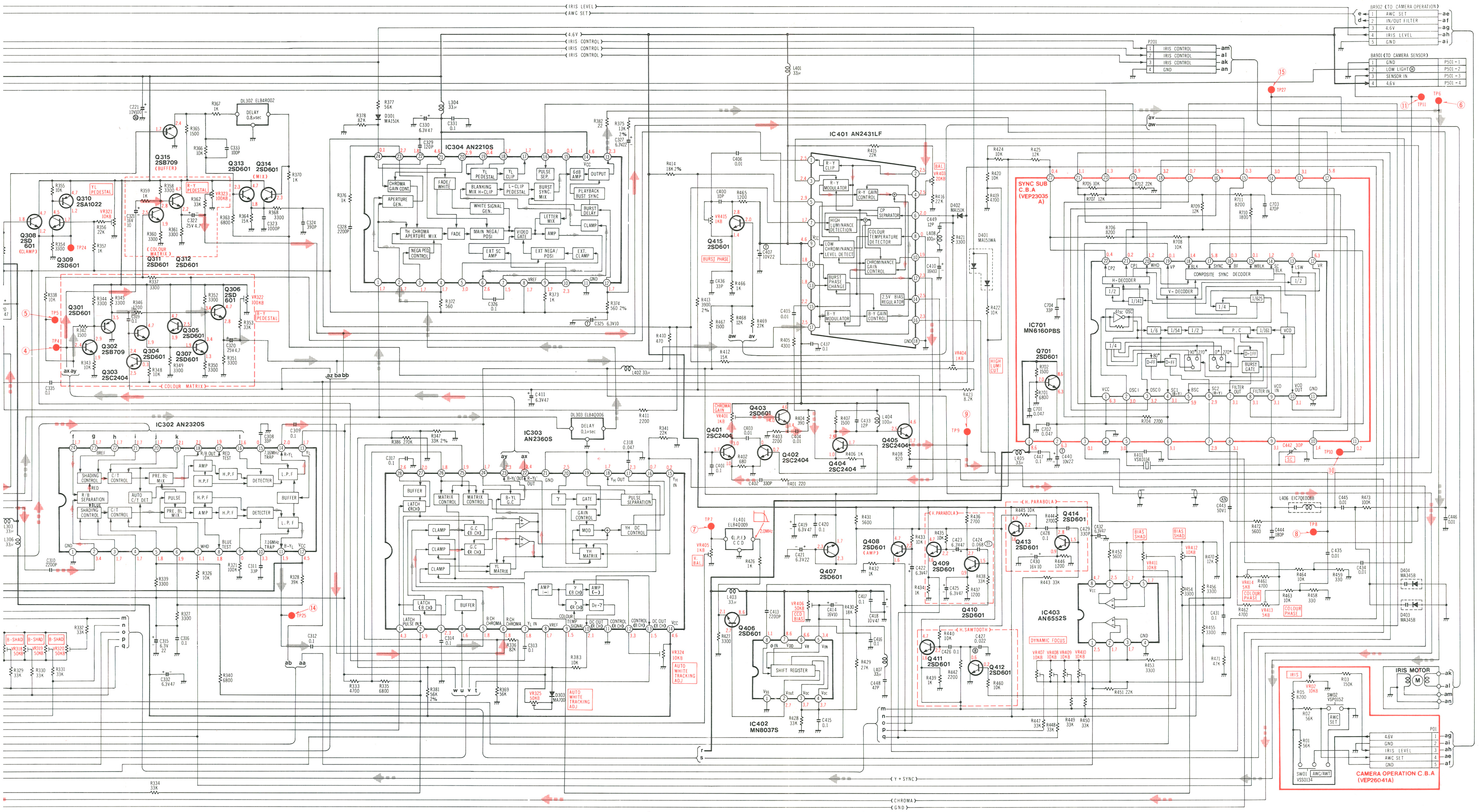
R & R-Y SIGNAL PATH

YH & PRE VI


PICK-UP TUBE SOCKET
VEK2343
DEFLECTION COIL
PRE AMP C.BOARD (VEP25007A)
Q105 2SK316(P)
Q104 2SA1022(C)
Q103 2SC2404 (C.D)
Q102 2SA1022 (C)
Q101 2SD601(Q.R.S)
ZOOM MOTOR
Q806 2SD636(R)
Q805 2SD636(R)
Q803 2SB641 (R)
Q804 2SD636(R)
Q801 2SB641 (R)
Q802 2SD636(R)
ZOOM C.B.A (VEP20188A)
START/STOP C.B.A (VJB20042)
BIAS LIGHT(VSQ0434)
P601 (TO POWER SUPPLY,LUMINANCE,CHROMINANCE)
Q609 2SD601 (AMP)
Q610 2SC1567 (AMP)
Q611 2SD1051
IC602 NJM4558M
Q613 2SB819
Q612 2SD601 (INV)
Q608 2SD601
Q614 2SD601
Q615 2SC1567A
Q616 2SD601A
Q631 2SD601
(ASTABLE MULTIVIBRATOR)
Q619 2SD1051
Q628 2SD601
Q629 2SD601
Q630 2SB709
Q617 2SB709
Q618 2SB970 (BUFFER)
Q620 2SB709
Q621 2SD814
Q623 2SB792
Q622 2SD601
Q624 2SD814
Q625 2SB709
Q626 2SD601A
Q601 2SB819
Q602 2SD601
Q603 2SD601
Q604 2SD601
Q605 2SD1051
(VOLTAGE REGULATOR)
IC601 NJM4556MB
Q606 2SD601
Q633 2SD601A
IC902 AN6912S
Q607 2SD601
RA902 EXB-M16D7OCG
RA901 EXB-M16D7OCG
D/A CONVERTER
IC201 NJM3414
Q902 2SB970
Q901 2SD601
IC901 μPD7507G-613
IC202 AN2110S
IC301 AN231
TARGET VOLT
H-SIZE
H-LIN1
H-LIN2
V.CENTRE
V.SIZE
BEAM
FOCUS
HIGH-VOLTAGE
IRIS
AWC OFFSET
BIAS LIGHT
AWT INPUT
AWC INPUT
RED GAIN CONTROL
BLUE GAIN CONTROL
RECTURE OFF
LACH CONTROL
AWT (FULL AUTO)
AWC SET
PRE VIDEO
IRIS LEVEL
AWC SET
IRIS CONTROL
V.DEF.COIL
Y+SYNC
CHROMA
GND
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13


B & B-Y SIGNAL PATH
R & R-Y SIGNAL PATH
YH & PRE VIDEO SIGNAL PATH
CHROMA(PRE VIDEO) SIGNAL PATH
IRIS LEVEL
AWC SET
PRE VIDEO
IRIS CONTROL
4.6 V
IC201 NJM3414
IC202 AN2110S
IC301 AN2310S
IC302 AN2320S
IC303 AN2360S
IC304 AN2210S
IC901 μPD7507G-613
Q616 2SD601A
Q625 2SB709
Q626 2SD601A
Q901 2SD601
Q902 2SB970
Q301 2SD601
Q302 2SB709
Q303 2SC2404
Q304 2SD601
Q305 2SD601
Q306 2SD601
Q307 2SD601
Q308 2SD601 (CLAMP)
Q309 2SD601
Q310 2SA1022
Q311 2SD601
Q312 2SD601
Q313 2SD601
Q314 2SD601 (MIX)
Q315 2SB709 (BUFFER)
DL301 MT645L 83F
DL302 ELB4R002
FL301 ELB4Q007
FL302 ELB4T001
FL303 ELB4S008
3.9MHz TRAP
1H DELAY
DELAY 0.8μsec
COLOUR MATRIX
FOCUS
HIGH-VOLTAGE
BEAM
IRIS
AGC
CONVERTER
RA901 -M16D70CG
V.DEF.COIL
Y+SYNC
CHROMA
GND
8.6 V
TP1
TP2
TP3
TP4
TP5
TP13
TP20
TP21
TP22
TP24
TP25
TP26
8
9
10
11
12
13
14
15
16
17
18
19
20
21

VIDEO) SIGNAL PATH


IRIS LEVEL
AWC SET
4.6V
IRIS CONTROL
BA902 (TO CAMERA OPERATION)
AWC SET
IN/OUT FILTER
IRIS LEVEL
GND
BA901 (TO CAMERA SENSOR)
LOW LIGHT
SENSOR IN
P201
TP27
TP11
TP6
Q315 2SB709 (BUFFER)
Q313 2SD601
Q314 2SD601 (MIX)
DL302 ELB4R002
DELAY 0.8μsec
Q310 2SA1022
Q308 2SD601 (CLAMP)
Q309 2SD601
Q311 2SD601
Q312 2SD601
(COLOUR MATRIX)
YL PEDESTAL
R-Y PEDESTAL
B-Y PEDESTAL
TP24
TP5
TP4
Q301 2SD601
Q302 2SB709
Q303 2SC2404
Q304 2SD601
Q305 2SD601
Q306 2SD601
Q307 2SD601
COLOUR MATRIX
IC304 AN2210S
CHROMA GAIN CONT.
APERTURE GEN.
YH CHROMA APERTURE MIX
NEGA PED. CONTROL
FADE/WHITE
FADE
BLANKING MIX H-CLIP
WHITE SIGNAL GEN.
MAIN NEGA/POSI
EXT SC AMP
YL PEDESTAL
YL CLIP
L-CLIP PEDESTAL
VIDEO GATE
PULSE SEP.
BURST SYNC. MIX
LETTER MIX
AMP
EXT NEGA/POSI
EXT. CLAMP
64dB AMP
OUTPUT
PLAYBACK BUST SYNC
BURST DELAY
CLAMP
IC401 AN2431LF
R-Y CLIP
R-Y MODULATOR
R-Y GAIN CONTROL
CP SEPARATOR
HIGH LUMINANCE DETECTION
COLOUR TEMPERATURE DETECTOR
LOW CHROMINANCE LEVEL DETECT
CHROMINANCE GAIN CONTROL
BURST PHASE CHANGE
2.5V BIAS REGULATOR
B-Y MODULATOR
B-Y GAIN CONTROL
Q415 2SD601
BURST PHASE
BAL
HIGH LUMI CUT
SYNC SUB C.B.A (VEP23035A)
IC701 MN6160PBS
Q701 2SD601
H-DECODER
V-DECODER
COMPOSITE SYNC DECODER
BURST GATE
IC302 AN2320S
SHADING CONTROL
C/T CONTROL
PRE. BL MIX
R/B SEPARATION
AUTO C/T DET
PULSE
H.P.F
AMP
DETECTER
L.P.F
BUFFER
7.16MHz TRAP
RED TEST
BLUE TEST
B-SHAD
TP25
IC303 AN2360S
DL303 ELB4Q006
DELAY 0.1μsec
LATCH (RCH)
MATRIX CONTROL
B-YL G.C
GATE
PULSE SEPARATION
CLAMP
G.C (B CH)
G.C (R CH)
YL MATRIX
GAIN CONTROL
MOD
YH DC CONTROL
YH MATRIX
LATCH (B CH)
AMP
De-7
VR324 AUTO WHITE TRACKING ADJ
VR325 AUTO WHITE TRACKING ADJ
CHROMA GAIN
Q401 2SC2404
Q402 2SC2404
Q403 2SD601
Q404 2SC2404
Q405 2SC2404
TP9
TP7
FL401 ELB4Q009
CCD
2.0MHz
Q406 2SD601
Q407 2SD601
Q408 2SD601 (AMP)
IC402 MN8037S
SHIFT REGISTER
CCD BIAS
V. PARABOLA
Q409 2SD601
Q410 2SD601
H. SAWTOOTH
Q411 2SD601
Q412 2SD601
DYNAMIC FOCUS
H. PARABOLA
Q413 2SD601
Q414 2SD601
BIAS SHAD
IC403 AN6552S
TP8
TP10
COLOUR PHASE
IRIS MOTOR
IRIS
AWC SET
SW01 AWC/AWT VSS0134
CAMERA OPERATION C.B.A (VEP26041A)
Y + SYNC
CHROMA
GND

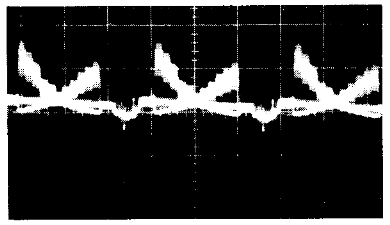
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: THE WAVEFORM OF THIS DIAGRAM MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

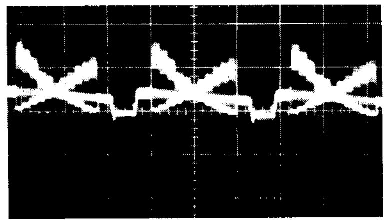
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

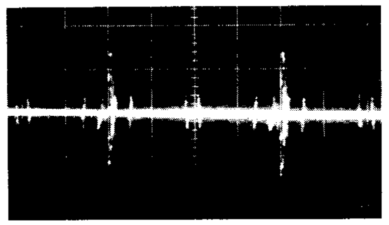
17 18 19 20 21 22 23 24 25 26 27 28 29



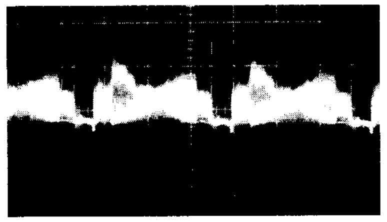
①**TP1**
0.5V/20µsec. div. 0.75Vp-p
(Trigger: TP10)



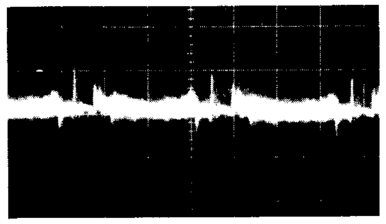
②**TP2**
0.5V/20µsec. div. 0.75Vp-p



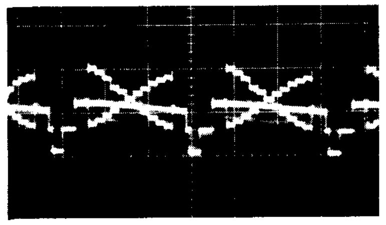
③**TP3**
0.5V/5msec. div.



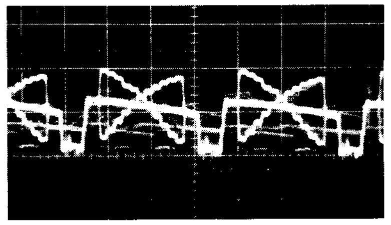
④**TP4**
0.2V/20µsec. div. 0.24Vp-p
(Trigger: TP10)



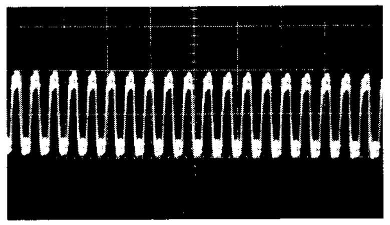
⑤**TP5**
0.1V/20µsec. div. 0.15Vp-p
(Trigger: TP10)



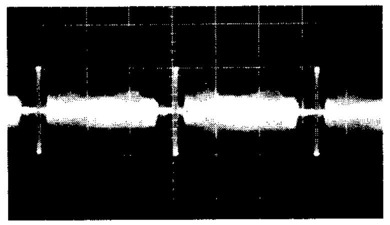
⑥**TP6**
1V/20µsec. div. 2Vp-p
(Trigger: TP10)



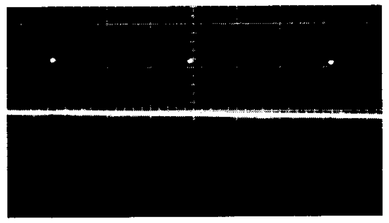
⑦**TP7**
0.1V/20µsec. div. 0.2Vp-p
(Trigger: TP10)



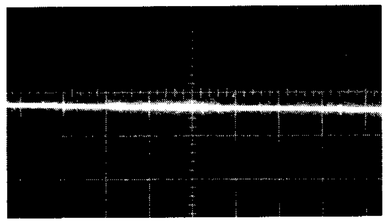
⑧**TP8**
0.1V/0.5µsec. div. 0.2Vp-p



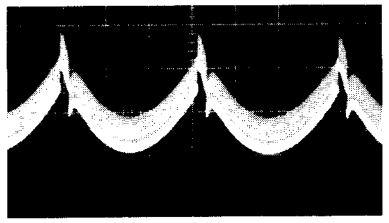
⑨**TP9**
0.2V/20µsec. div. 0.4Vp-p
(Trigger: TP10)



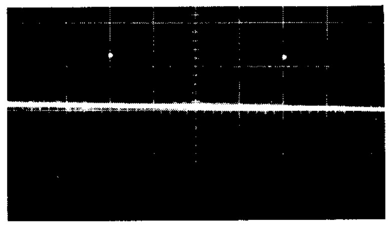
⑩**TP10**
0.2V/20µsec. div. 0.22Vp-p



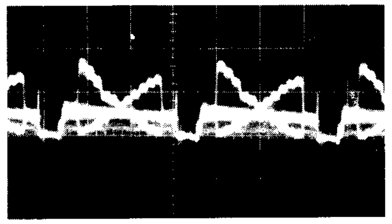
⑪**TP11**
0.5V/20µsec. div. DC 1.7V
(Trigger: TP10)



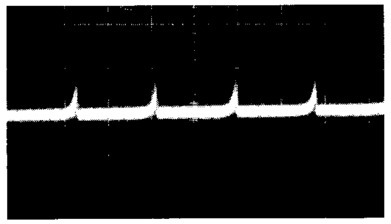
⑫**TP13**
2V/20µsec. div. 4.8Vp-p
(Trigger: TP10)



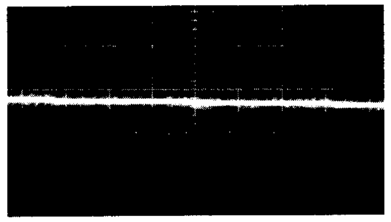
⑬**TP14**
5V/5msec. div. 6Vp-p



⑭**TP25**
0.2V/20µsec. div. 0.32Vp-p



⑮**TP27**
0.2V/20µsec. div. 0.2Vp-p



⑯**TP16**
DC 1.9V

⑰**TP17**
DC 1.9V

⑱**TP18**
DC 1.5V

⑲**TP19**
DC 1.5V

CAMERA SCHEMATIC

Transistor	
Q101	E-1
Q102	F-1
Q103	F-2
Q104	F-1
Q105	F-2
Q301	E-17
Q302	E-17
Q303	E-17
Q304	E-18
Q305	E-18
Q306	E-18
Q307	E-18
Q308	F-17
Q309	F-17
Q310	F-17
Q311	F-18
Q312	F-18
Q313	G-18
Q314	G-19
Q315	G-18
Q401	D-23
Q402	D-23
Q403	D-23
Q404	D-24
Q405	D-24
Q406	B-23
Q407	C-24
Q408	C-24
Q409	C-25
Q410	C-25
Q411	B-25
Q412	B-25
Q413	C-26
Q414	C-26
Q415	F-23
Q601	D-3
Q602	D-3
Q603	D-4
Q604	D-4
Q605	D-5
Q606	D-7
Q607	B-5
Q608	G-7
Q609	F-3
Q610	G-4
Q611	G-5
Q612	F-7
Q613	G-7
Q614	F-7
Q615	F-8
Q616	G-9
Q617	F-5
Q618	E-5
Q619	F-6
Q620	E-6
Q621	E-6
Q622	E-7
Q623	F-8
Q624	E-8
Q625	E-8
Q626	E-9
Q628	F-3
Q629	F-4
Q630	E-4
Q631	F-3
Q633	D-8
Q701	E-26
Q801	C-1
Q802	C-1
Q803	C-1
Q804	C-1
Q805	D-1
Q806	D-1
Q901	E-11
Q902	E-10

Integrated Circuit	
IC201	F-11
IC202	F-12
IC301	E-14
IC302	D-18
IC303	D-21
IC304	G-20
IC401	G-24
IC402	A-23
IC403	B-26
IC601	D-6
IC602	F-6
IC701	E-26
IC901	B-10
IC902	C-3

Test Point	
TP1	F-12
TP2	G-15
TP3	E-15
TP4	E-17
TP5	E-17
TP6	G-29
TP7	C-23
TP8	C-28
TP9	D-25
TP10	D-29
TP11	G-29
TP12	F-6
TP13	F-10
TP14	E-7
TP15	D-4
TP16	A-4
TP17	A-5
TP18	A-4
TP19	A-5
TP20	B-9
TP21	F-11
TP22	F-11
TP24	F-17
TP25	B-19
TP26	F-10
TP27	G-28

Adjustment	
VR02	B-28
VR201	F-12
VR202	F-12
VR203	F-13
VR204	F-11
VR205	G-15
VR301	E-13
VR302	F-15
VR303	D-16
VR304	D-15
VR306	C-13
VR307	C-13
VR308	B-13
VR309	C-14
VR310	C-14
VR311	C-14
VR312	C-15
VR313	C-15
VR314	C-16
VR315	B-16
VR316	B-16
VR317	B-16
VR318	B-16
VR319	B-17
VR320	B-17
VR321	F-17
VR322	E-19
VR323	F-18
VR324	B-22
VR325	B-21
VR401	D-23
VR403	F-25
VR404	E-25
VR405	C-23
VR406	C-24
VR407	B-26
VR408	B-26
VR409	B-26
VR410	B-26
VR411	C-27
VR412	C-27
VR413	C-28
VR414	C-28
VR415	F-23
VR601	D-5
VR602	D-7
VR603	D-7
VR604	D-8
VR605	G-4
VR606	G-5
VR607	F-5
VR608	F-6
VR609	F-9
VR610	G-10
VR611	E-6
VR612	B-5
VR901	C-5
VR902	C-5
C103	E-2
C305	D-15
C442	D-28

Connector	
P01	A-29
P201	G-27
P401	E-2
P601	B-2
P602	G-2
P603	B-3
P801	C-2
P802	D-2
P803	C-2
BA101	E-2
BA601	G-2
BA604	D-3
BA901	G-29
BA902	G-29

ADDRESS INFORMATION

CAMERA CIRCUIT BOARD

Transistor	
Q101	C-11 Ⓒ
Q102	C-1 Ⓕ
Q103	C-1 Ⓕ
Q104	C-1 Ⓕ
Q105	D-1 Ⓕ
Q301	B-2 Ⓕ
Q302	B-3 Ⓕ
Q303	B-10 Ⓒ
Q304	B-10 Ⓒ
Q305	B-10 Ⓒ
Q306	B-10 Ⓒ
Q307	B-10 Ⓒ
Q308	C-2 Ⓕ
Q309	B-3 Ⓕ
Q310	B-2 Ⓕ
Q311	B-3 Ⓕ
Q312	B-3 Ⓕ
Q313	B-3 Ⓕ
Q314	B-3 Ⓕ
Q315	B-3 Ⓕ
Q401	A-9 Ⓒ
Q402	A-9 Ⓒ
Q403	A-9 Ⓒ
Q404	A-3 Ⓕ
Q405	A-9 Ⓒ
Q406	A-2 Ⓕ
Q407	A-3 Ⓕ
Q408	B-3 Ⓕ
Q409	A-3 Ⓕ
Q410	B-3 Ⓕ
Q411	A-4 Ⓕ
Q412	A-4 Ⓕ
Q413	A-9 Ⓒ
Q414	A-3 Ⓕ
Q415	A-9 Ⓒ
Q601	A-8 Ⓒ
Q602	B-5 Ⓕ
Q603	B-5 Ⓕ
Q604	B-5 Ⓕ
Q605	A-8 Ⓒ
Q606	B-5 Ⓕ
Q607	A-5 Ⓕ
Q608	B-7 Ⓒ
Q609	C-4 Ⓕ
Q610	C-8 Ⓒ
Q611	C-8 Ⓒ
Q612	B-5 Ⓕ
Q613	C-7 Ⓒ
Q614	C-5 Ⓕ
Q615	C-7 Ⓒ
Q616	C-5 Ⓕ
Q617	B-4 Ⓕ
Q618	B-8 Ⓒ
Q619	B-8 Ⓒ
Q620	B-4 Ⓕ
Q621	B-5 Ⓕ
Q622	B-8 Ⓒ
Q623	B-5 Ⓕ
Q624	B-5 Ⓕ
Q625	B-7 Ⓒ
Q626	B-5 Ⓕ
Q628	A-5 Ⓕ
Q629	A-5 Ⓕ
Q630	B-8 Ⓒ
Q631	C-4 Ⓕ
Q633	B-5 Ⓕ
Q701	A-1 Ⓕ
Q801	B-6 Ⓕ
Q802	B-6 Ⓕ
Q803	A-6 Ⓕ
Q804	A-6 Ⓕ
Q805	A-6 Ⓕ
Q806	A-6 Ⓕ
Q901	B-4 Ⓕ
Q902	B-4 Ⓕ

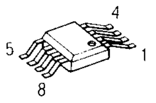
Integrated Circuit	
IC201	C-2 Ⓕ
IC202	C-3 Ⓕ
IC301	C-3 Ⓕ
IC302	B-3 Ⓕ
IC303	C-4 Ⓕ
IC304	B-2 Ⓕ
IC401	A-3 Ⓕ
IC402	A-2 Ⓕ
IC403	B-4 Ⓕ
IC502	B-1 Ⓕ
IC501	B-1 Ⓕ
IC601	B-5 Ⓕ
IC602	B-5 Ⓕ
IC701	A-1 Ⓕ
IC901	A-8 Ⓒ
IC902	B-4 Ⓕ

Test Point	
TP1	B-10 Ⓒ
TP2	C-10 Ⓒ
TP3	B-9 Ⓒ
TP4	B-9 Ⓒ
TP5	B-9 Ⓒ
TP6	B-10 Ⓒ
TP7	A-9 Ⓒ
TP8	A-9 Ⓒ
TP9	A-9 Ⓒ
TP10	B-11 Ⓒ
TP11	C-8 Ⓒ
TP12	C-8 Ⓒ
TP13	B-7 Ⓒ
TP14	A-9 Ⓒ
TP15	B-8 Ⓒ
TP16	B-9 Ⓒ
TP17	A-9 Ⓒ
TP18	B-9 Ⓒ
TP19	A-9 Ⓒ
TP20	A-8 Ⓒ
TP21	C-9 Ⓒ
TP25	B-9 Ⓒ
TP26	A-7 Ⓒ
TP27	A-10 Ⓒ

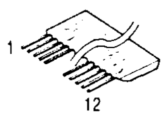
Adjustment	
VR02	D-10 Ⓒ
VR201	C-10 Ⓒ
VR202	B-10 Ⓒ
VR203	B-10 Ⓒ
VR204	C-11 Ⓒ
VR205	C-10 Ⓒ
VR301	C-9 Ⓒ
VR302	B-9 Ⓒ
VR303	C-9 Ⓒ
VR304	B-10 Ⓒ
VR306	C-8 Ⓒ
VR307	C-9 Ⓒ
VR308	C-9 Ⓒ
VR309	B-9 Ⓒ
VR310	C-9 Ⓒ
VR311	C-9 Ⓒ
VR312	C-9 Ⓒ
VR313	C-9 Ⓒ
VR314	B-9 Ⓒ
VR315	B-9 Ⓒ
VR316	B-9 Ⓒ
VR317	C-9 Ⓒ
VR318	B-9 Ⓒ
VR319	B-9 Ⓒ
VR320	B-9 Ⓒ
VR321	B-10 Ⓒ
VR322	A-9 Ⓒ
VR323	B-10 Ⓒ
VR324	B-9 Ⓒ
VR325	B-9 Ⓒ
VR401	A-9 Ⓒ
VR403	A-10 Ⓒ
VR404	B-10 Ⓒ
VR405	A-9 Ⓒ
VR406	A-10 Ⓒ
VR407	B-8 Ⓒ
VR408	B-8 Ⓒ
VR409	B-9 Ⓒ
VR410	B-9 Ⓒ
VR411	A-9 Ⓒ
VR412	A-9 Ⓒ
VR413	B-10 Ⓒ
VR414	A-10 Ⓒ
VR415	A-10 Ⓒ
VR501	B-11 Ⓒ
VR502	B-11 Ⓒ
VR601	B-8 Ⓒ
VR602	B-7 Ⓒ
VR603	A-7 Ⓒ
VR604	B-7 Ⓒ
VR605	B-8 Ⓒ
VR606	B-8 Ⓒ
VR607	C-8 Ⓒ
VR608	B-8 Ⓒ
VR609	B-8 Ⓒ
VR610	B-7 Ⓒ
VR611	B-8 Ⓒ
VR612	A-8 Ⓒ
VR901	A-8 Ⓒ
VR902	A-8 Ⓒ
C103	C-11 Ⓒ
C305	C-8 Ⓒ
C442	A-10 Ⓒ

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

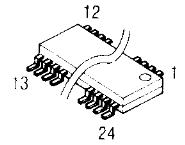
ICs & TRANSISTORs INFORMATION



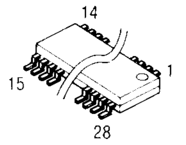
NJM3414M
AN6552S
NJM4556MB
NJM4558M
MN8037S



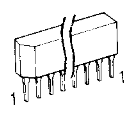
VCR0122



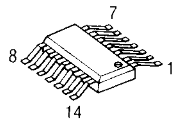
AN2110S
AN2310S
AN2320S
AN2210S



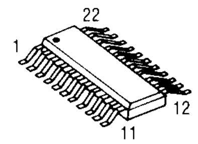
AN2360S



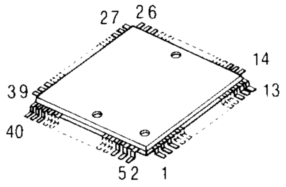
AN2431LF



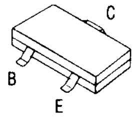
AN6912S



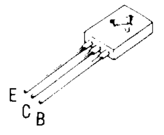
MN6160PBS



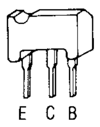
µPD7507G613



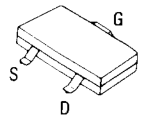
2SA1022
2SC2404
2SD601
2SB709
2SD601A
2SB970
2SD814
2SB792



2SC1567A



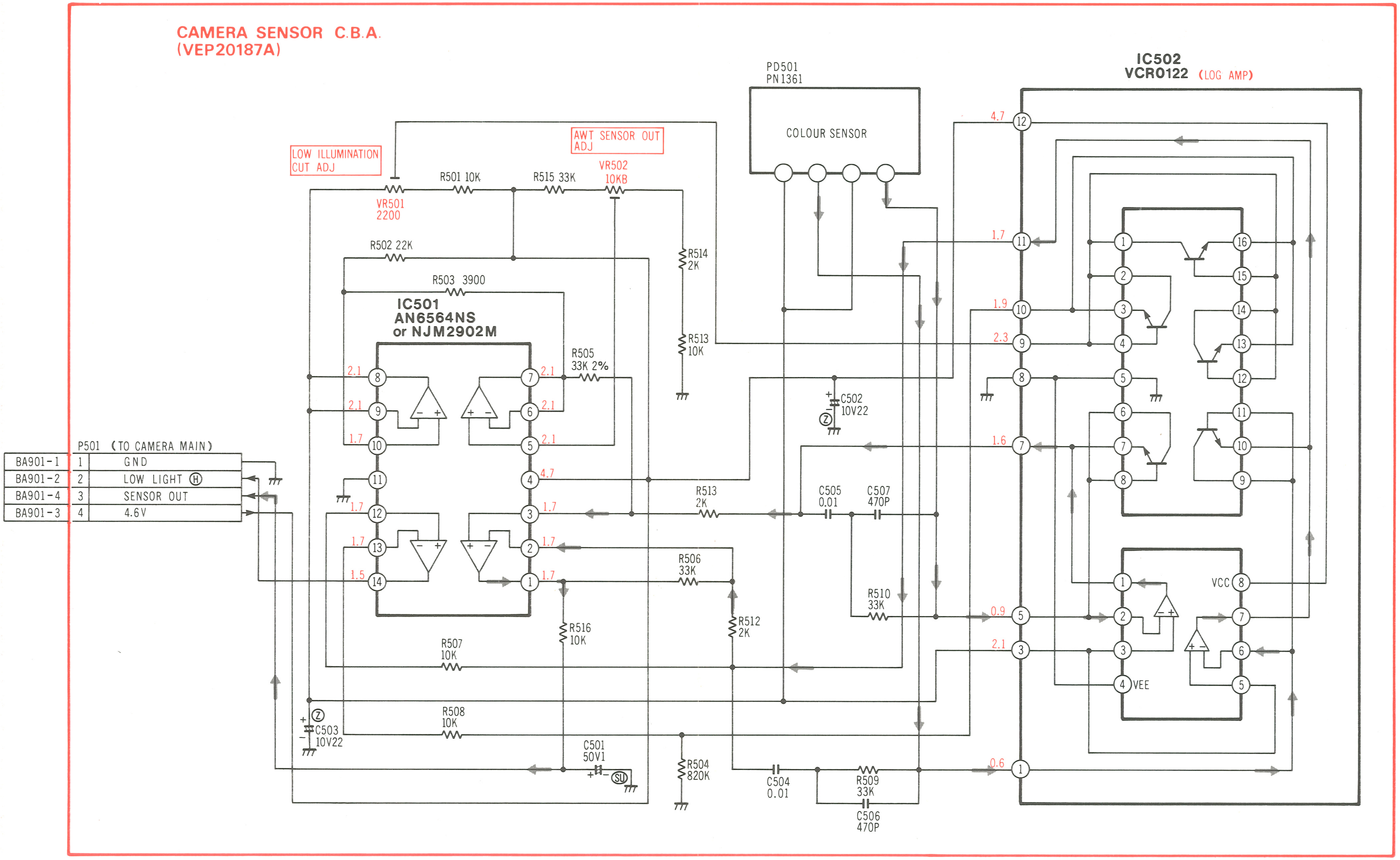
2SB819
2SD1051
2SB641
2SD636



2SK316

3-11. CAMERA SENSOR SCHEMATIC DIAGRAM

← AWT SENSOR SIGNAL CURRENT FLOW

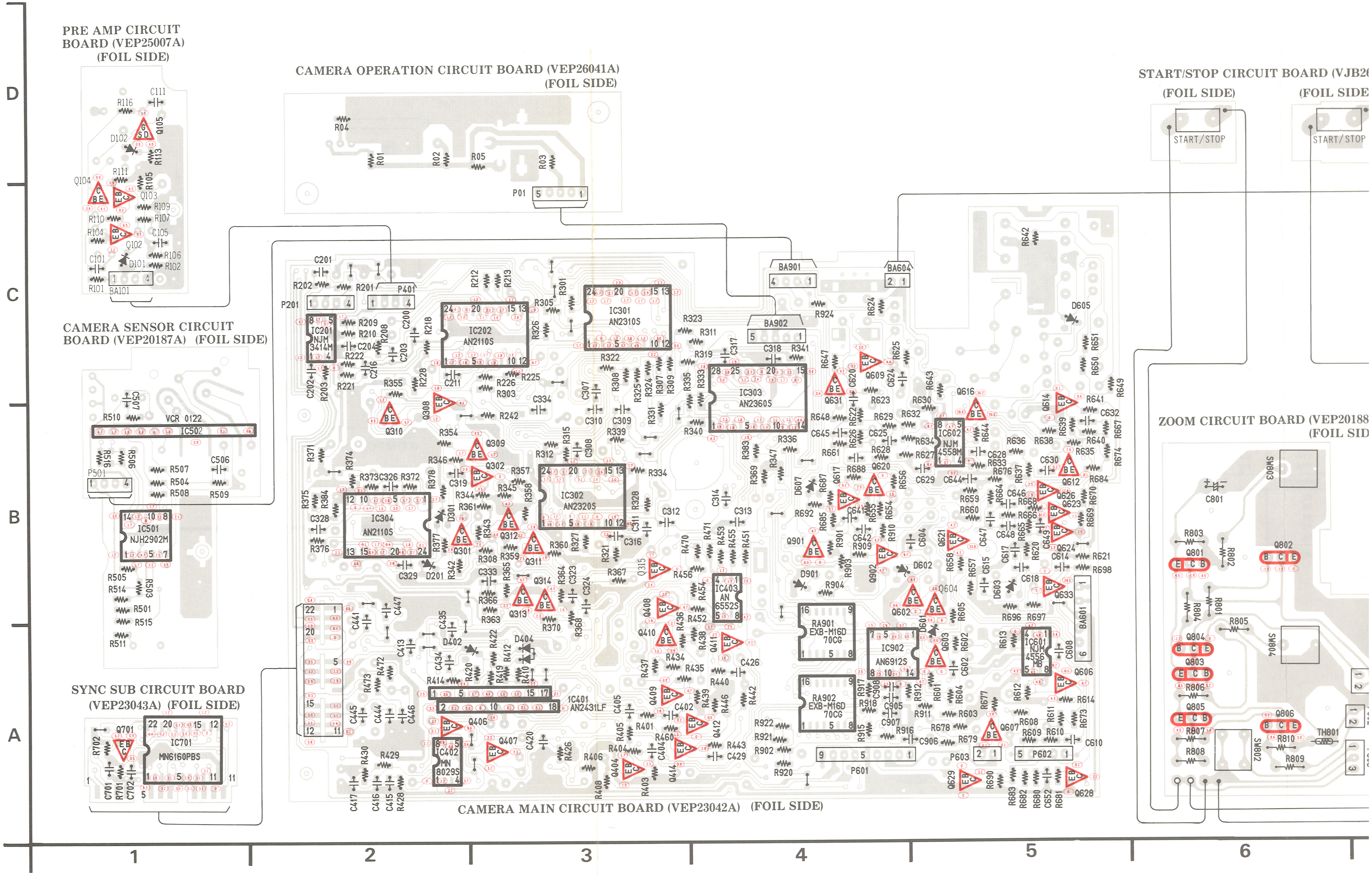

CAMERA SENSOR C.B.A.
(VEP20187A)
PD501
PN1361
COLOUR SENSOR
IC502
VCR0122 (LOG AMP)
LOW ILLUMINATION CUT ADJ
AWT SENSOR OUT ADJ
VR501 2200
R501 10K
R515 33K
VR502 10KB
R502 22K
R503 3900
R514 2K
R513 10K
IC501
AN6564NS
or NJM2902M
R505 33K 2%
C502 10V22
P501 (TO CAMERA MAIN)
BA901-1 1 GND
BA901-2 2 LOW LIGHT Ⓗ
BA901-4 3 SENSOR OUT
BA901-3 4 4.6V
R513 2K
C505 0.01
C507 470P
R506 33K
R510 33K
R512 2K
R516 10K
R507 10K
R508 10K
C503 10V22
C501 50V1
R504 820K
C504 0.01
R509 33K
C506 470P
VCC
VEE
4.7
1.7
1.9
2.3
1.6
0.9
2.1
0.6
2.1
2.1
1.7
1.7
1.7
1.5
2.1
2.1
2.1
4.7
1.7
1.7
1.7

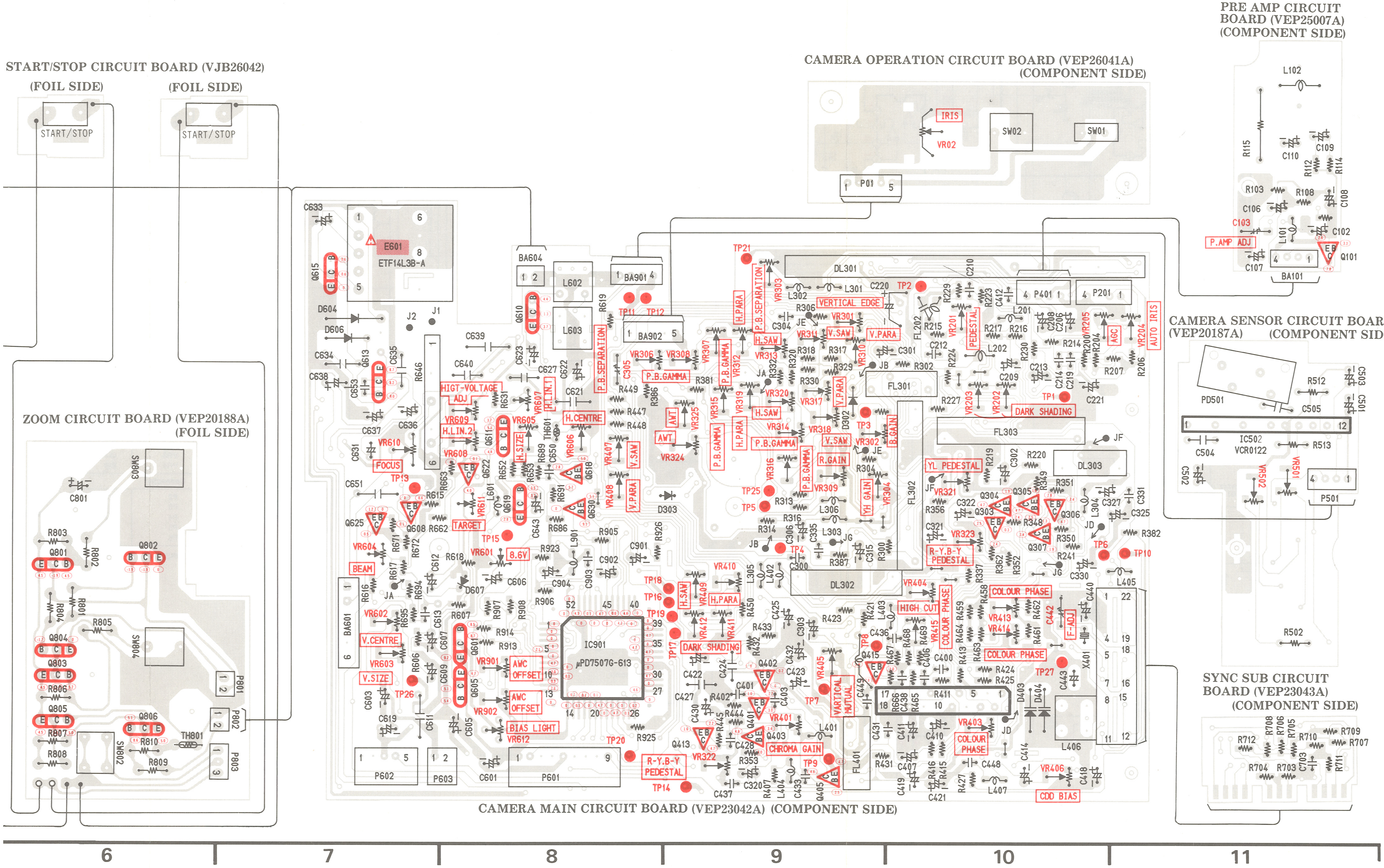
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

Back Page:
CAMERA Section

3-12. CAMERA MAIN CIRCUIT BOARD (VEP23042A)


PRE AMP CIRCUIT BOARD (VEP25007A) (FOIL SIDE)
CAMERA OPERATION CIRCUIT BOARD (VEP26041A) (FOIL SIDE)
START/STOP CIRCUIT BOARD (VJB2
(FOIL SIDE)
(FOIL SIDE
START/STOP
START/STOP
CAMERA SENSOR CIRCUIT BOARD (VEP20187A) (FOIL SIDE)
ZOOM CIRCUIT BOARD (VEP20188
(FOIL SID
SYNC SUB CIRCUIT BOARD (VEP23043A) (FOIL SIDE)
CAMERA MAIN CIRCUIT BOARD (VEP23042A) (FOIL SIDE)
IC201 NJM 3414M
IC202 AN2110S
IC301 AN2310S
IC302 AN2320S
IC303 AN2360S
IC304 AN2110S
IC401 AN2431LF
IC402 MN 8029S
IC403 AN 6552S
IC501 NJH2902M
IC502
IC602 NJM 4558M
IC601 NJM 4556 MB
IC701 MN6160PBS
IC902 AN6912S
RA901 EXB-M16D 70CG
RA902 EXB-M16D 70CG
P01
P201
P401
P501
P601
P602
P603
BA101
BA601
BA604
BA901
BA902
D
C
B
A
1
2
3
4
5
6


START/STOP CIRCUIT BOARD (VJB26042)

(FOIL SIDE)

(FOIL SIDE)

ZOOM CIRCUIT BOARD (VEP20188A)
(FOIL SIDE)

CAMERA OPERATION CIRCUIT BOARD (VEP26041A)
(COMPONENT SIDE)

PRE AMP CIRCUIT BOARD (VEP25007A)
(COMPONENT SIDE)

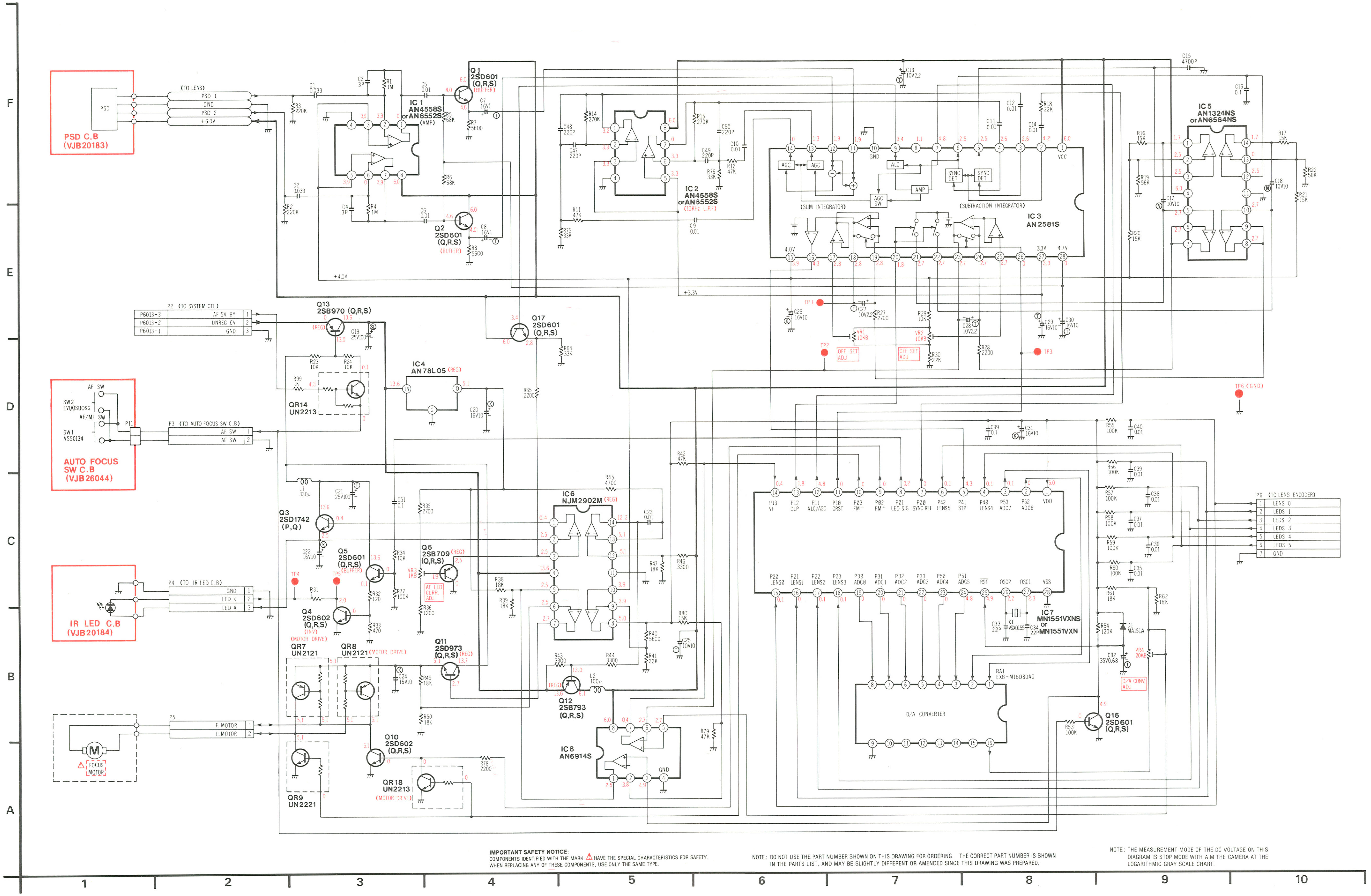
CAMERA SENSOR CIRCUIT BOARD (VEP20187A) (COMPONENT SIDE)

SYNC SUB CIRCUIT BOARD (VEP23043A)
(COMPONENT SIDE)

CAMERA MAIN CIRCUIT BOARD (VEP23042A) (COMPONENT SIDE)

START/STOP
START/STOP
IRIS
VR02
SW02
SW01
P01
L102
R115
C110
C109
R112
R114
R103
R108
C108
C106
C103
P.AMP ADJ
C102
L101
Q101
C107
BA101
E601
ETF14L3B-A
C633
Q615
D604
D606
J2
J1
BA604
L602
L603
BA901
BA902
P.B.SEPARATION
HIGT-VOLTAGE ADJ
VR609
H.LIN.2
VR605
H.CENTRE
VR610
FOCUS
TP13
VR608
H.SIZE
VR606
VR611
TARGET
TP15
VR604
VR601
8.6V
BEAM
VR602
V.CENTRE
VR603
V.SIZE
TP26
VR901
AWC OFFSET
AWC OFFSET
VR902
BIAS LIGHT
VR612
TP20
R-Y.B-Y PEDESTAL
TP14
VR322
IC901
μPD7507G-613
TP11
TP12
VR306
VR308
P.B.GAMMA
AWT
VR324
VR307
VR325
VR312
VR315
VR319
P.B.GAMMA
H.PARA
H.PARA
TP21
VR303
P.B.SEPARATION
DL301
L301
C220
TP2
VERTICAL EDGE
VR301
H.SAW
VR311
V.SAW
V.PARA
VR313
VR320
VR317
V.PARA
H.SAW
VR314
VR318
V.SAW
VR302
B.GAIN
P.B.GAMMA
R.GAIN
VR316
VR309
YH GAIN
VR304
TP25
TP5
TP3
TP4
FL301
FL302
FL303
DL302
DL303
YL PEDESTAL
VR321
VR323
R-Y.B-Y PEDESTAL
TP6
TP10
VR201
PEDESTAL
VR205
AGC
VR204
AUTO IRIS
VR203
VR202
DARK SHADING
TP1
P401
P201
L201
L202
TP18
TP16
TP19
TP17
H.SAW
VR409
H.PARA
VR410
VR412
VR411
DARK SHADING
VR405
VARTICAL HUTUAL
TP7
VR401
CHROMA GAIN
TP9
VR404
HIGH CUT
COLOUR PHASE
VR415
VR413
VR414
COLOUR PHASE
C442
F-ADJ
TP27
TP8
VR403
COLOUR PHASE
VR406
CDD BIAS
X401
L405
L406
L407
FL401
PD501
IC502
VCR0122
R512
C505
R513
VR502
VR501
P501
R502
Q801
Q802
Q803
Q804
Q805
Q806
SW803
SW807
SW802
TH801
P801
P802
P803
P602
P603
P601
BA601
R709
R707
R712
R708
R706
R705
R710
R704
R703
C703
R711
6
7
8
9
10
11

3-13. AUTO FOCUS SCHEMATIC DIAGRAM


PSD C.B (VJB20183)
(TO LENS)
PSD 1
GND
PSD 2
+6.0V
IC 1 AN4558S or AN6552S (AMP)
Q1 2SD601 (Q,R,S) (BUFFER)
Q2 2SD601 (Q,R,S) (BUFFER)
IC 2 AN4558S or AN6552S (10KHz L.P.F)
IC 3 AN 2581S
(SUM INTEGRATOR)
(SUBTRACTION INTEGRATOR)
AGC
ALC
AMP
AGC SW
SYNC DET
IC 5 AN1324NS or AN6564NS
P2 (TO SYSTEM CTL)
P6013-3 AF 5V BY
P6013-2 UNREG 6V
P6013-1 GND
Q13 2SB970 (Q,R,S) (REG)
Q17 2SD601 (Q,R,S)
QR14 UN2213
IC4 AN78L05 (REG)
TP1
TP2
TP3
TP4
TP5
TP6 (GND)
VR1 10KB OFF SET ADJ
VR2 10KB OFF SET ADJ
AUTO FOCUS SW C.B (VJB26044)
AF SW
SW2 EVQQSUQSG
AF/MF SW
SW1 VSS0134
P3 (TO AUTO FOCUS SW C.B)
Q3 2SD1742 (P,Q)
Q5 2SD601 (Q,R,S) (BUFFER)
Q6 2SB709 (Q,R,S) (REG)
VR3 1KB AF LED CURR. ADJ
IC6 NJM2902M (REG)
IR LED C.B (VJB20184)
P4 (TO IR LED C.B)
GND
LED K
LED A
Q4 2SD602 (Q,R,S) (INV) (MOTOR DRIVE)
QR7 UN2121
QR8 UN2121 (MOTOR DRIVE)
Q11 2SD973 (Q,R,S) (REG)
Q12 2SB793 (Q,R,S) (REG)
IC8 AN6914S
P5
F. MOTOR
FOCUS MOTOR
QR9 UN2221
Q10 2SD602 (Q,R,S)
QR18 UN2213 (MOTOR DRIVE)
IC7 MN1551VXNS or MN1551VXN
P13 VF
P12 CLP
P11 ALC/AGC
P10 CRST
P03 FM−
P02 FM+
P01 LED SIG
P00 SYNC REF
P42 LENS5
P41 STP
P40 LENS4
P53 ADC7
P52 ADC6
VDD
P20 LENS0
P21 LENS1
P22 LENS2
P23 LENS3
P30 ADC0
P31 ADC1
P32 ADC2
P33 ADC3
P50 ADC4
P51 ADC5
RST
OSC2
OSC1
VSS
RA1 EXB-M16D80AG
D/A CONVERTER
VR4 20KB D/A CONV. ADJ
D1 MA151A
Q16 2SD601 (Q,R,S)
P6 (TO LENS ENCODER)
LENS 0
LEDS 1
LEDS 2
LEDS 3
LEDS 4
LEDS 5
GND
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

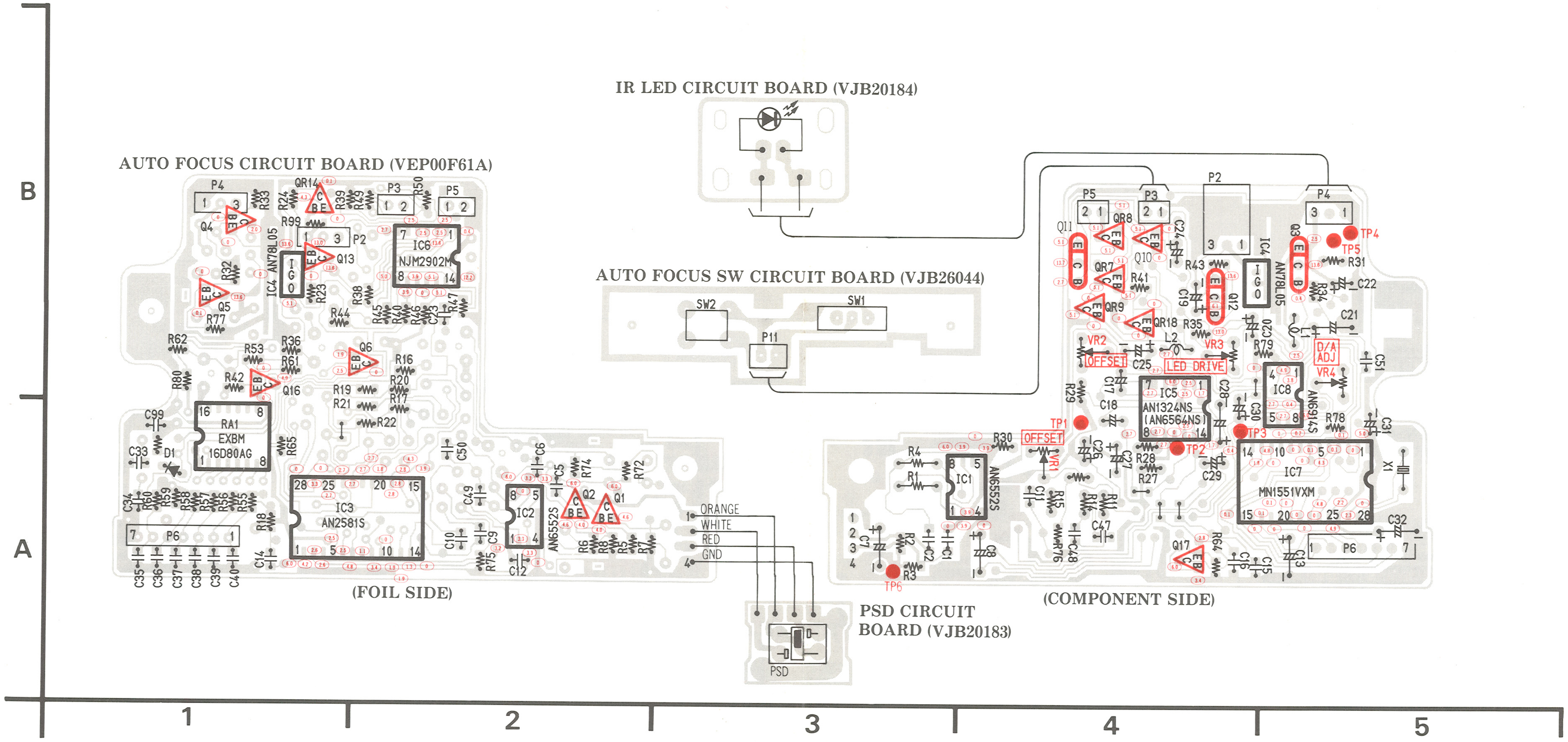
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

Back Page:
CAMERA Section

3-14. AUTO FOCUS CIRCUIT BOARD (VEP00F61A)

AUTO FOCUS SCHEMATIC	
Transistor	
Q1	F-4
Q2	E-4
Q3	C-3
Q4	B-3
Q5	C-3
Q6	C-4
Q10	A-3
Q11	B-4
Q12	B-5
Q13	E-3
Q16	B-9
Q17	E-4
Transistor & Resistor	
QR7	B-3
QR8	B-3
QR9	A-3
QR14	D-3
QR18	A-3
Integrated Circuit	
IC1	F-3
IC2	F-5
IC3	E-8
IC4	D-4
IC5	F-9
IC6	C-5
IC7	B-8
IC8	A-5
Test Point	
TP1	E-6
TP2	D-6
TP3	D-8
TP4	C-3
TP5	C-3
TP6	D-10
Adjustment	
VR1	D-7
VR2	D-7
VR3	C-3
VR4	B-9
Connector	
P2	E-2
P3	D-2
P4	C-2
P5	B-2
P6	C-10

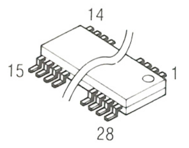
ADDRESS INFORMATION


IR LED CIRCUIT BOARD (VJB20184)
AUTO FOCUS CIRCUIT BOARD (VEP00F61A)
AUTO FOCUS SW CIRCUIT BOARD (VJB26044)
SW2
SW1
P11
PSD CIRCUIT BOARD (VJB20183)
PSD
(FOIL SIDE)
(COMPONENT SIDE)
ORANGE
WHITE
RED
GND
IC6 NJM2902M
IC4 AN78L05
IC3 AN2581S
IC2 AN6552S
RA1 EXBM 16D80AG
IC1 AN6552S
IC5 AN1324NS (AN6564NS)
IC7 MN1551VXM
IC8 AN6914S
IC4 AN78L05
OFFSET
LED DRIVE
D/A ADJ
VR1
VR2
VR3
VR4
TP1
TP2
TP3
TP4
TP5
TP6
P2
P3
P4
P5
P6
X1
B
A
1
2
3
4
5

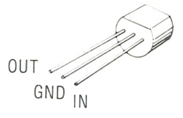
AUTO FOCUS CIRCUIT BOARD		
Transistor		
Q1	A-2	Ⓕ
Q2	A-2	Ⓕ
Q3	B-5	Ⓒ
Q4	B-1	Ⓕ
Q5	B-1	Ⓕ
Q6	B-2	Ⓕ
Q10	B-4	Ⓒ
Q11	B-4	Ⓒ
Q12	B-4	Ⓒ
Q13	B-1	Ⓕ
Q16	B-1	Ⓕ
Q17	A-4	Ⓒ
Transistor & Resistor		
QR7	B-4	Ⓒ
QR8	B-4	Ⓒ
QR9	B-4	Ⓒ
QR14	B-1	Ⓕ
QR18	B-4	Ⓒ
Integrated Circuit		
IC1	A-4	Ⓒ
IC2	A-2	Ⓕ
IC3	A-1	Ⓕ
IC4	B-1	Ⓕ
IC4	B-4	Ⓒ
IC5	B-4	Ⓒ
IC6	B-2	Ⓕ
IC7	B-5	Ⓒ
IC8	B-4	Ⓒ
Test Point		
TP1	A-4	Ⓒ
TP2	A-4	Ⓒ
TP3	A-4	Ⓒ
TP4	B-5	Ⓒ
TP5	B-5	Ⓒ
TP6 (GND)	A-3	Ⓒ
Adjustment		
VR1	A-4	Ⓒ
VR2	B-4	Ⓒ
VR3	B-4	Ⓒ
VR4	B-4	Ⓒ

ADDRESS INFORMATION
Ⓒ … COMPONENT SIDE
Ⓕ … FOIL SIDE

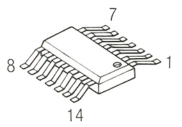
ICs & TRANSISTORs INFORMATION



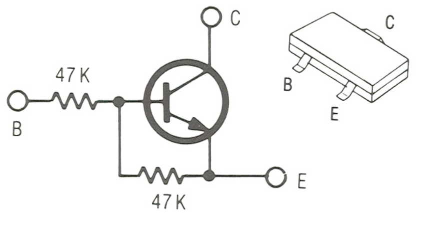
AN2581S
MN1551VXNS

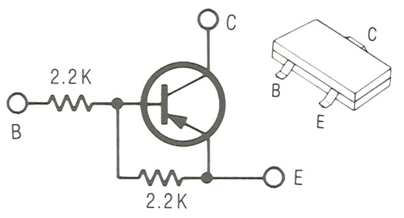


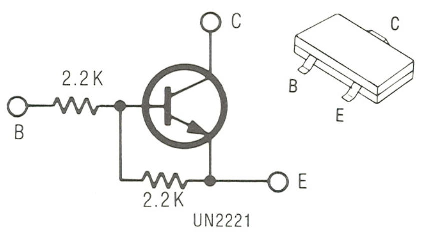
AN78L05

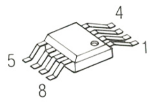


AN1324NS
NJM2902M

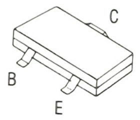

47K
B
C
E
47K
B
C
E
UN2213


2.2K
B
C
E
2.2K
B
C
E
UN2121

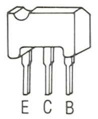

2.2K
B
C
E
2.2K
B
C
E
UN2221



AN4558S
AN6914S

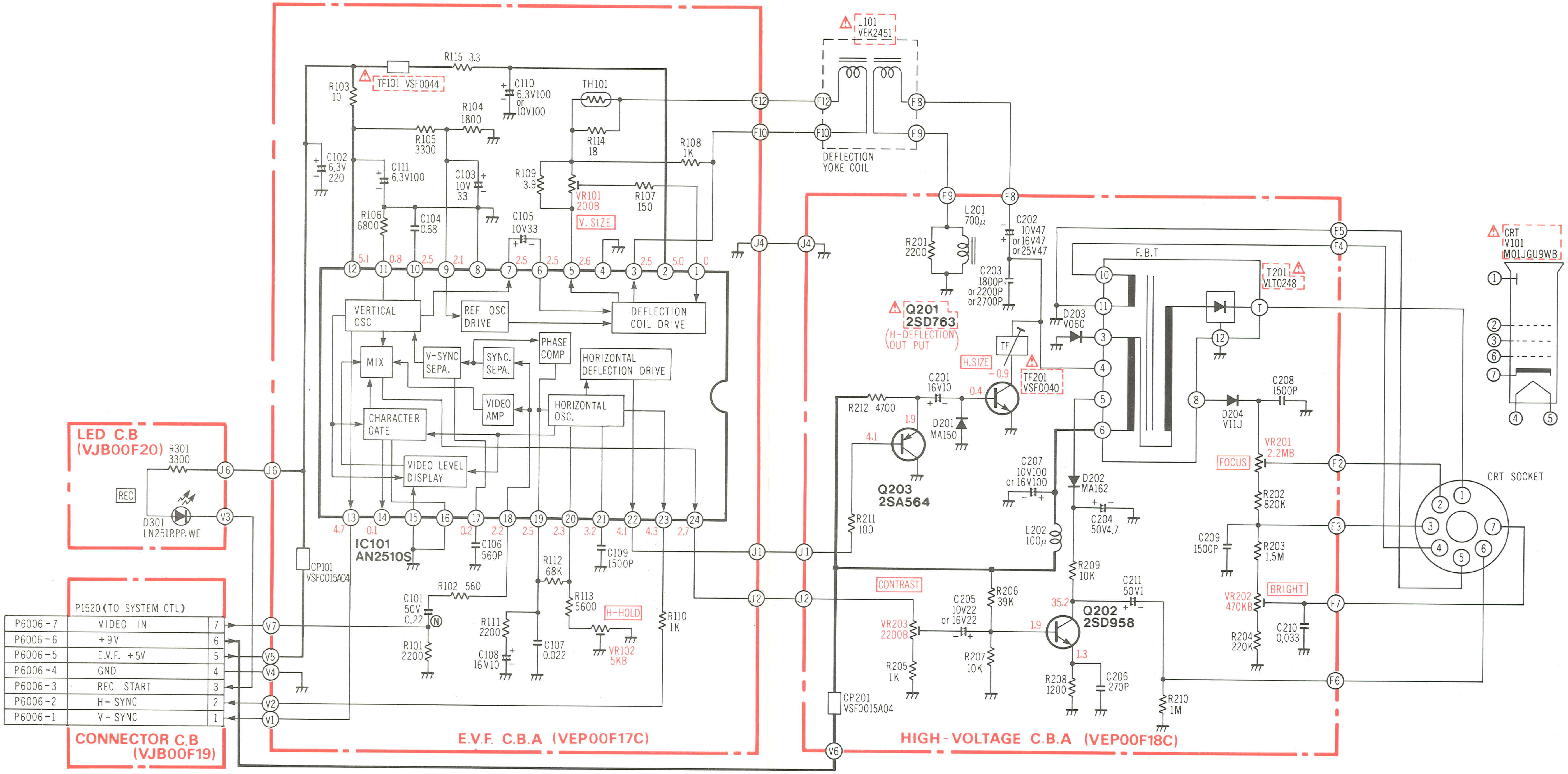


2SB709
2SD601
2SD602
2SB970



2SD973
2SB793
2SD1742

3-15. ELECTRONIC VIEW FINDER (E.V.F) SCHEMATIC DIAGRAM

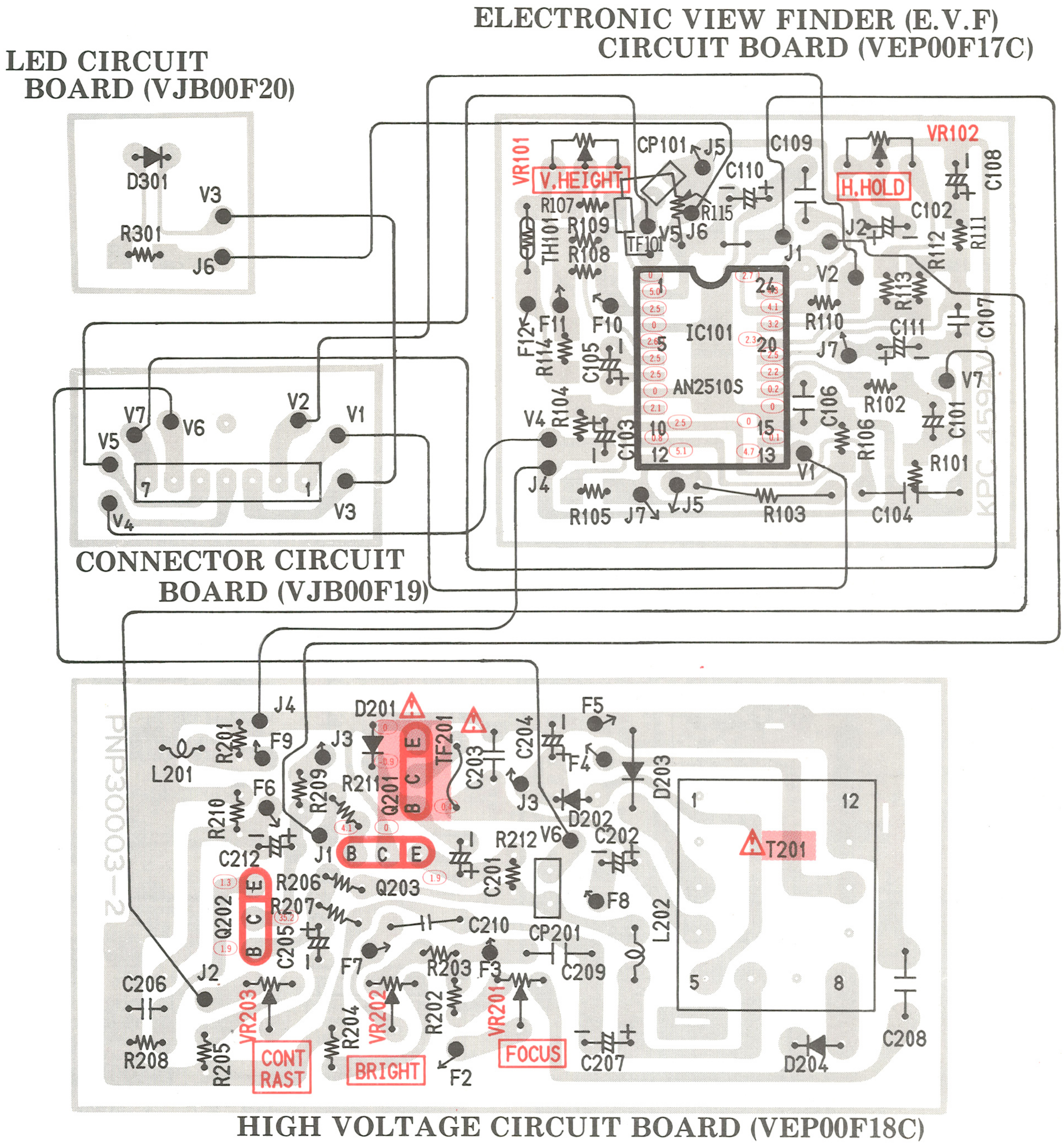

LED C.B (VJB00F20)
R301 3300
REC
D301 LN251RPP.WE
CONNECTOR C.B (VJB00F19)
P1520 (TO SYSTEM CTL)
P6006-7 VIDEO IN 7
P6006-6 +9V 6
P6006-5 E.V.F. +5V 5
P6006-4 GND 4
P6006-3 REC START 3
P6006-2 H-SYNC 2
P6006-1 V-SYNC 1
E.V.F. C.B.A (VEP00F17C)
IC101 AN2510S
VERTICAL OSC
REF OSC DRIVE
DEFLECTION COIL DRIVE
MIX
V-SYNC SEPA.
SYNC. SEPA.
PHASE COMP
HORIZONTAL DEFLECTION DRIVE
VIDEO AMP
HORIZONTAL OSC.
CHARACTER GATE
VIDEO LEVEL DISPLAY
R115 3.3
R103 10
TF101 VSF0044
C110 6.3V100 or 10V100
TH101
R104 1800
R105 3300
R114 18
R108 1K
C102 6.3V 220
C111 6.3V100
C103 10V 33
R109 3.9
VR101 200B
V. SIZE
R107 150
R106 6800
C104 0.68
C105 10V33
CP101 VSF0015A04
C101 50V 0.22
R101 2200
R102 560
C106 560P
R111 2200
C108 16V10
C107 0.022
R112 68K
R113 5600
H-HOLD
VR102 5KB
C109 1500P
R110 1K
L101 VEK2451
DEFLECTION YOKE COIL
HIGH-VOLTAGE C.B.A (VEP00F18C)
L201 700μ
R201 2200
C202 10V47 or 16V47 or 25V47
C203 1800P or 2200P or 2700P
Q201 2SD763
(H-DEFLECTION OUT PUT)
H.SIZE
TF
TF201 VSF0040
C201 16V10
R212 4700
D201 MA150
Q203 2SA564
R211 100
C207 10V100 or 16V100
D202 MA162
C204 50V4.7
L202 100μ
R209 10K
C211 50V1
D203 V06C
F.B.T
T201 VLT0248
D204 V11J
C208 1500P
VR201 2.2MB
FOCUS
R202 820K
C209 1500P
R203 1.5M
BRIGHT
VR202 470KB
R204 220K
C210 0.033
CONTRAST
C205 10V22 or 16V22
R206 39K
VR203 2200B
R205 1K
R207 10K
Q202 2SD958
R208 1200
C206 270P
R210 1M
CP201 VSF0015A04
CRT V101 M01JGU9WB
CRT SOCKET

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

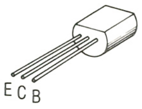
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

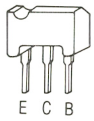
3-16. ELECTRONIC VIEW FINDER (E.V.F) CIRCUIT BOARD (VEP00F17C, VEP00F18C)


ELECTRONIC VIEW FINDER (E.V.F) CIRCUIT BOARD (VEP00F17C)
LED CIRCUIT BOARD (VJB00F20)
D301
V3
R301
J6
CONNECTOR CIRCUIT BOARD (VJB00F19)
V7
V6
V5
V2
V1
V4
V3
7
1
VR101
V.HEIGHT
R107
TH101
R109
R108
CP101
J5
C110
R115
TF101
V5
J6
C109
J1
VR102
H.HOLD
C102
C108
R111
R112
J2
V2
R113
R110
C111
C107
J7
V7
R102
C101
R101
C104
R103
IC101
AN2510S
1
5
10
12
24
20
15
13
F12
F11
F10
R114
C105
R104
C103
C106
R106
V1
J4
R105
J7
J5
HIGH VOLTAGE CIRCUIT BOARD (VEP00F18C)
PNP30003-2
J4
D201
R201
F9
J3
TF201
C204
F5
L201
R209
R211
Q201
C203
F4
D203
F6
R210
J3
D202
C212
J1
B C E
R212
V6
C202
Q203
C201
T201
R206
R207
F8
Q202
C205
C210
CP201
L202
C206
J2
F7
R203
F3
C209
VR203
VR202
R202
VR201
R208
R205
CONT RAST
R204
BRIGHT
F2
FOCUS
C207
D204
C208
1
12
5
8

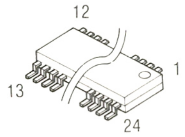
ICs & TRANSISTORs INFORMATION



2SD763
2SA564



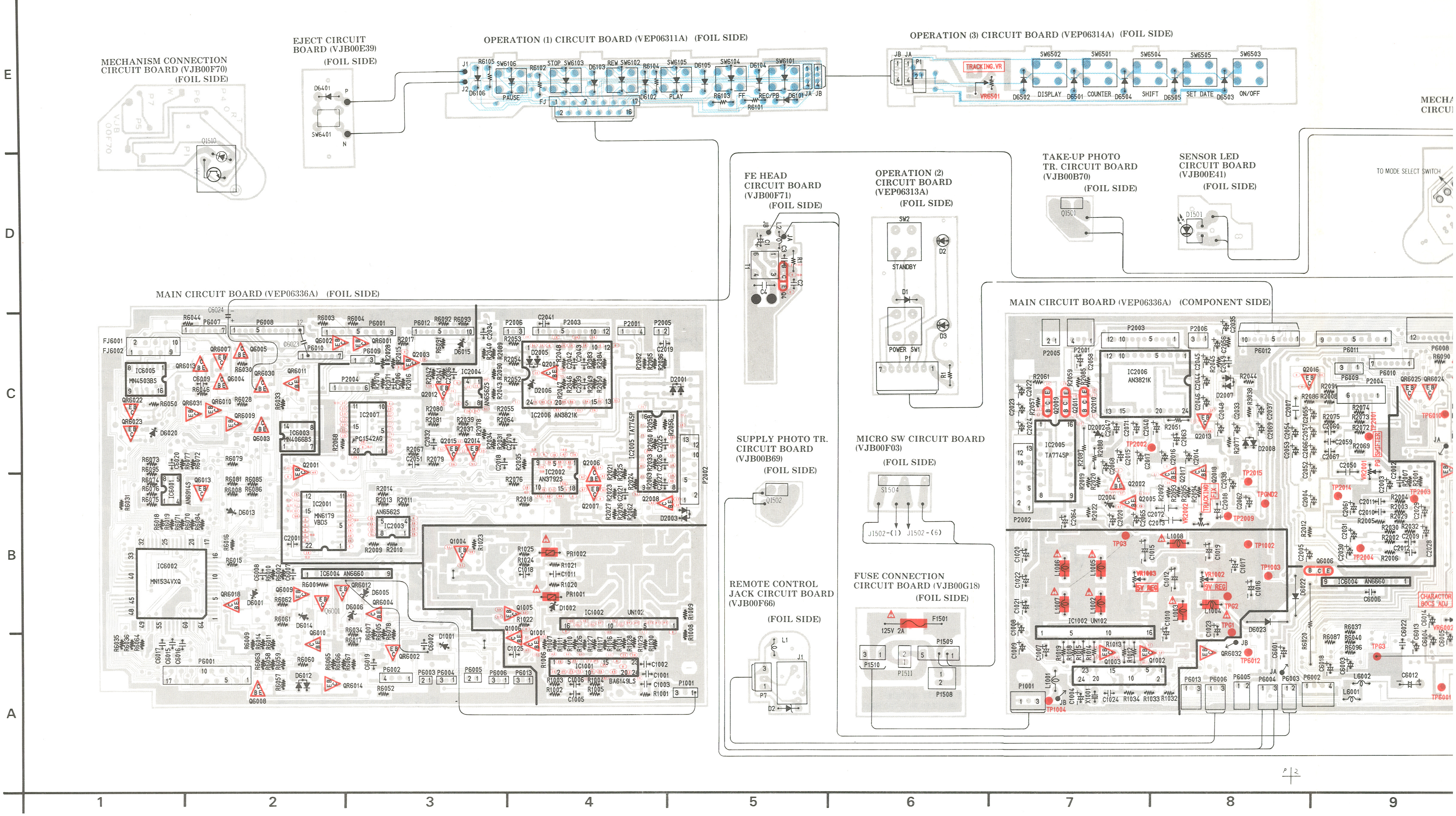
2SD958

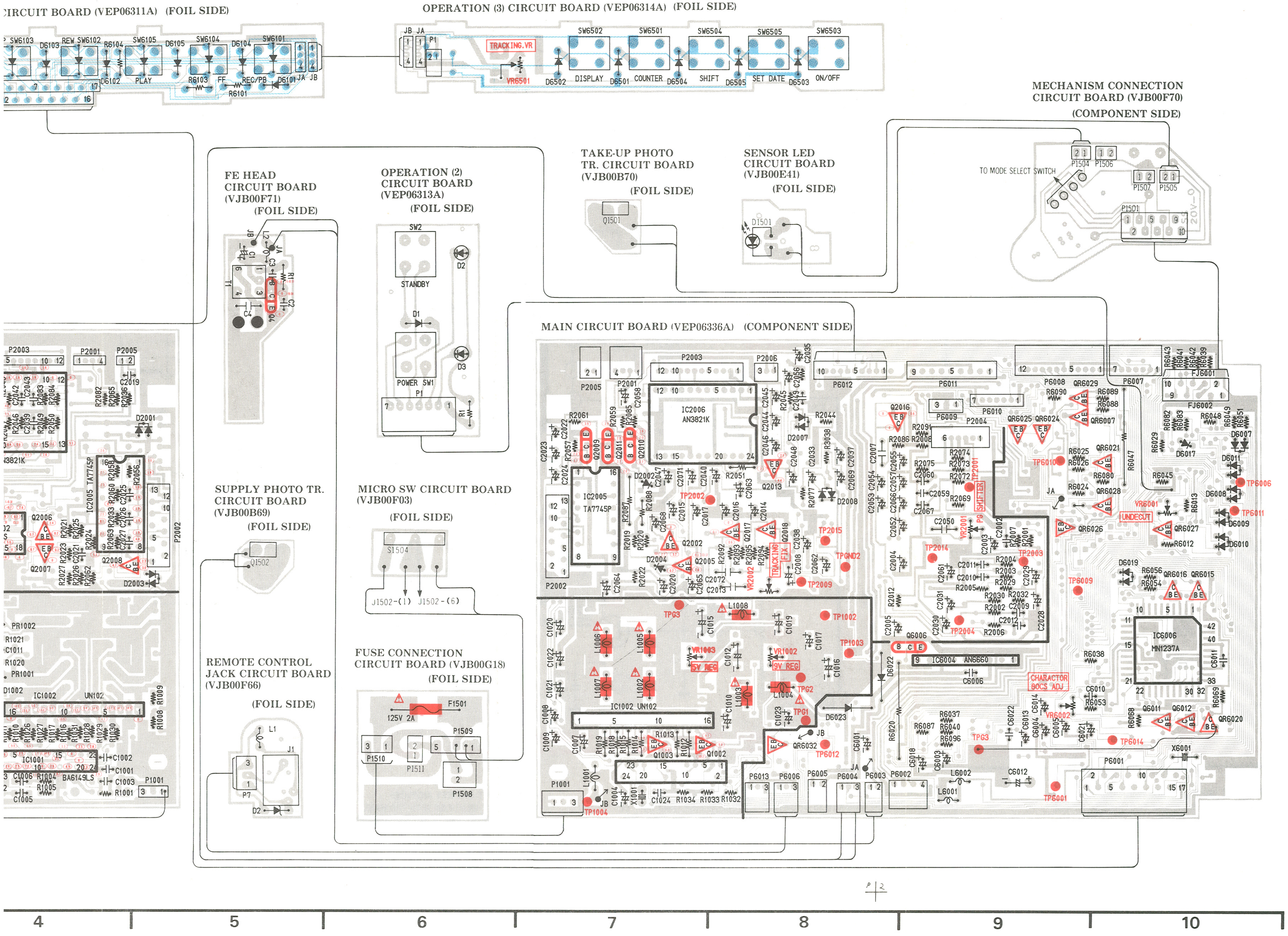


AM2510S

Next Page:
SYSTEM CONTROL Section

MAIN CIRCUIT BOARD (VEP06336A) —SYSTEM CONTROL—


MECHANISM CONNECTION CIRCUIT BOARD (VJB00F70) (FOIL SIDE)
EJECT CIRCUIT BOARD (VJB00E39) (FOIL SIDE)
OPERATION (1) CIRCUIT BOARD (VEP06311A) (FOIL SIDE)
OPERATION (3) CIRCUIT BOARD (VEP06314A) (FOIL SIDE)
FE HEAD CIRCUIT BOARD (VJB00F71) (FOIL SIDE)
OPERATION (2) CIRCUIT BOARD (VEP06313A) (FOIL SIDE)
TAKE-UP PHOTO TR. CIRCUIT BOARD (VJB00B70) (FOIL SIDE)
SENSOR LED CIRCUIT BOARD (VJB00E41) (FOIL SIDE)
TO MODE SELECT SWITCH
MAIN CIRCUIT BOARD (VEP06336A) (FOIL SIDE)
MAIN CIRCUIT BOARD (VEP06336A) (COMPONENT SIDE)
SUPPLY PHOTO TR. CIRCUIT BOARD (VJB00B69) (FOIL SIDE)
MICRO SW CIRCUIT BOARD (VJB00F03) (FOIL SIDE)
REMOTE CONTROL JACK CIRCUIT BOARD (VJB00F66) (FOIL SIDE)
FUSE CONNECTION CIRCUIT BOARD (VJB00G18) (FOIL SIDE)
PAUSE
STOP
REW
PLAY
FF
REC/PB
TRACKING.VR
DISPLAY
COUNTER
SHIFT
SET DATE
ON/OFF
STANDBY
POWER SW1
IC2006 AN3821K
IC2005 TA7745P
IC2002 AN3792S
IC2001 MN6179VBDS
IC2003 AN6562S
IC2007 μPC1542AG
IC6001 AN6914S
IC6002 MN1534VXQ
IC6003 MN4066BS
IC6004 AN6660
IC6005 MN4503BS
IC1001 BA6149LS
IC1002 UN102
E
D
C
B
A
1
2
3
4
5
6
7
8
9



IRCUIT BOARD (VEP06311A) (FOIL SIDE)

OPERATION (3) CIRCUIT BOARD (VEP06314A) (FOIL SIDE)

MECHANISM CONNECTION CIRCUIT BOARD (VJB00F70) (COMPONENT SIDE)

TAKE-UP PHOTO TR. CIRCUIT BOARD (VJB00B70) (FOIL SIDE)

SENSOR LED CIRCUIT BOARD (VJB00E41) (FOIL SIDE)

FE HEAD CIRCUIT BOARD (VJB00F71) (FOIL SIDE)

OPERATION (2) CIRCUIT BOARD (VEP06313A) (FOIL SIDE)

MAIN CIRCUIT BOARD (VEP06336A) (COMPONENT SIDE)

SUPPLY PHOTO TR. CIRCUIT BOARD (VJB00B69) (FOIL SIDE)

MICRO SW CIRCUIT BOARD (VJB00F03) (FOIL SIDE)

REMOTE CONTROL JACK CIRCUIT BOARD (VJB00F66) (FOIL SIDE)

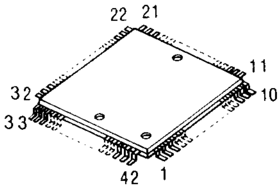
FUSE CONNECTION CIRCUIT BOARD (VJB00G18) (FOIL SIDE)

SW6103
SW6102
SW6105
SW6104
SW6101
REW
PLAY
FF
REC/PB
TRACKING.VR
VR6501
SW6502
SW6501
SW6504
SW6505
SW6503
DISPLAY
COUNTER
SHIFT
SET DATE
ON/OFF
TO MODE SELECT SWITCH
P1504
P1506
P1507
P1505
P1501
Q1501
D1501
STANDBY
POWER SW1
Q1502
S1504
J1502-(1)
J1502-(6)
125V 2A
F1501
P1510
P1511
P1509
P1508
IC2006
AN3821K
IC2005
TA7745P
IC1002
UN102
IC6006
MN1237A
IC6004
AN6660
9V REG
5V REG
VR1003
VR1002
VR2001
VR6001
VR6002
TRACKING F.IX
SHIFTER
UNDECUT
CHARACTOR BOCS ADJ
TP1001
TP1002
TP1003
TP1004
TP2001
TP2002
TP2003
TP2004
TP6001
TP6006
TP6009
TP6010
TP6011
TP6012
TP6014
TPGND2
4
5
6
7
8
9
10

SYSTEM CONTROL TRANSISTORs VOLTAGE CHART

REF. NO.	Q6001			Q6002			Q6003			Q6004			Q6005			Q6006		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	13.9	10.4	13.9	4.9	5.2	0.4	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.4	14.0	7.1
PLAY	13.9	10.4	13.9	0	5.2	0.2	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.9	14.0	7.6
REC	13.9	10.4	13.9	4.9	5.2	0.1	5.1	0.2	5.2	9.4	8.4	9.2	9.3	9.1	8.4	7.9	14.0	7.6
F.F	13.9	10.4	13.9	4.9	5.2	0.4	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.4	14.0	7.1
REW	13.9	10.4	13.9	4.9	5.2	0.4	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.4	14.0	7.1
REF. NO.	Q6007			Q6008			Q6009			Q6010			Q6011			Q6012		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	−0.2	14.0	0	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
PLAY	0	14.0	0.1	5.2	5.2	4.5	0	5.1	0	0	0	0.7	12.2	0	10.3	0	10.3	0
REC	0	14.0	0	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
F.F	2.0	14.0	2.1	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
REW	2.0	14.0	2.2	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
REF. NO.	Q6013																	
MODE	E	C	B															
STOP	0	4.0	0															
PLAY	0	4.0	0															
REC	0	4.0	0															
F.F	0	4.0	0															
REW	0	4.0	0															
REF. NO.	QR6001			QR6002			QR6004			QR6007			QR6009			QR6010		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	5.1	0	0	0	4.9
PLAY	0	0	0	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	0	5.1	0	5.1	0
REC	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	5.2	0.2	5.1	5.1	0	0	0	4.9
F.F	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	5.1	0	0	0	4.9
REW	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	5.1	0	0	0	4.9
REF. NO.	QR6011			QR6012			QR6013			QR6014			QR6015			QR6016		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	9.3	0.1	0	0	5.0	9.3	0	9.3	5.2	0	5.2	0	0	0	0	0	0
PLAY	0	9.3	0.1	0	2.5	0	9.3	0	9.3	5.2	0	5.2	0	0	0	0	0	0
REC	0	9.3	0.1	0	2.5	0.1	9.3	0	9.3	5.2	5.2	0.1	0	0	2.8	0	0.4	0
F.F	0	9.3	0.1	0	0.1	5.0	9.3	2.1	8.1	5.2	0	5.2	0	0	0	0	0	0
REW	0	9.3	0.1	0	0	5.0	9.3	2.2	8.1	5.2	0	5.2	0	0	0	0	0	0
REF. NO.	QR6018			QR6020			QR6021			QR6022			QR6023			QR6024		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	0	4.9
PLAY	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	3.7	0
REC	0	5.1	0	0	0	5.1	0	0	4.0	4.4	4.4	5.2	4.7	4.7	5.2	0	0	4.9
F.F	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	0	4.9
REW	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	0	4.9
REF. NO.	QR6025			QR6026			QR6027			QR6028			QR6029			QR6030		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0.1	0	0	0.1	5.9	3.0	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
PLAY	0	0.1	3.7	0	0.1	5.9	5.0	4.8	0.1	0	0	5.0	0	0.1	1.6	0	5.2	0.1
REC	0	0.1	0	0	0.1	5.9	2.7	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
F.F	0	0.1	0	0	0.1	5.9	3.0	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
REW	0	0.1	0	0	0.1	5.9	3.0	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
REF. NO.	QR6031																	
MODE	E	C	B															
STOP	3.8	5.2	5.1															
PLAY	0	5.2	0															
REC	3.8	5.2	5.1															
F.F	3.8	5.2	5.1															
REW	3.8	5.2	5.1															

ICs & TRANSISTORs INFORMATION



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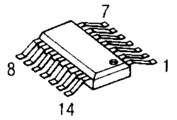

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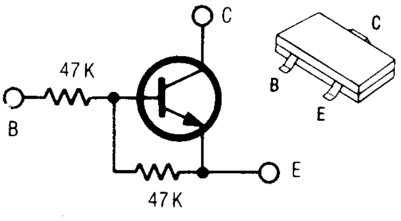

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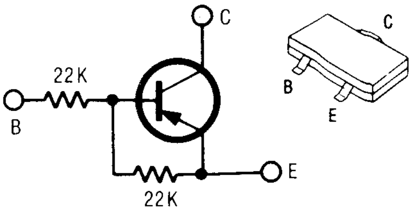

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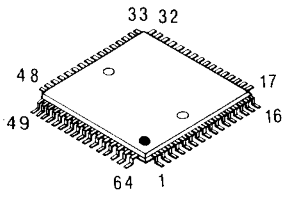

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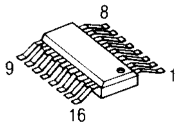

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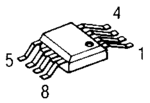

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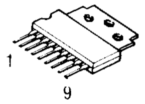

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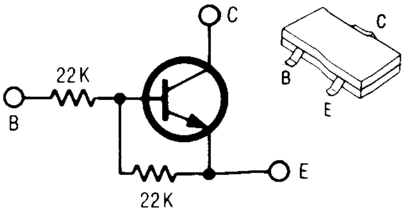


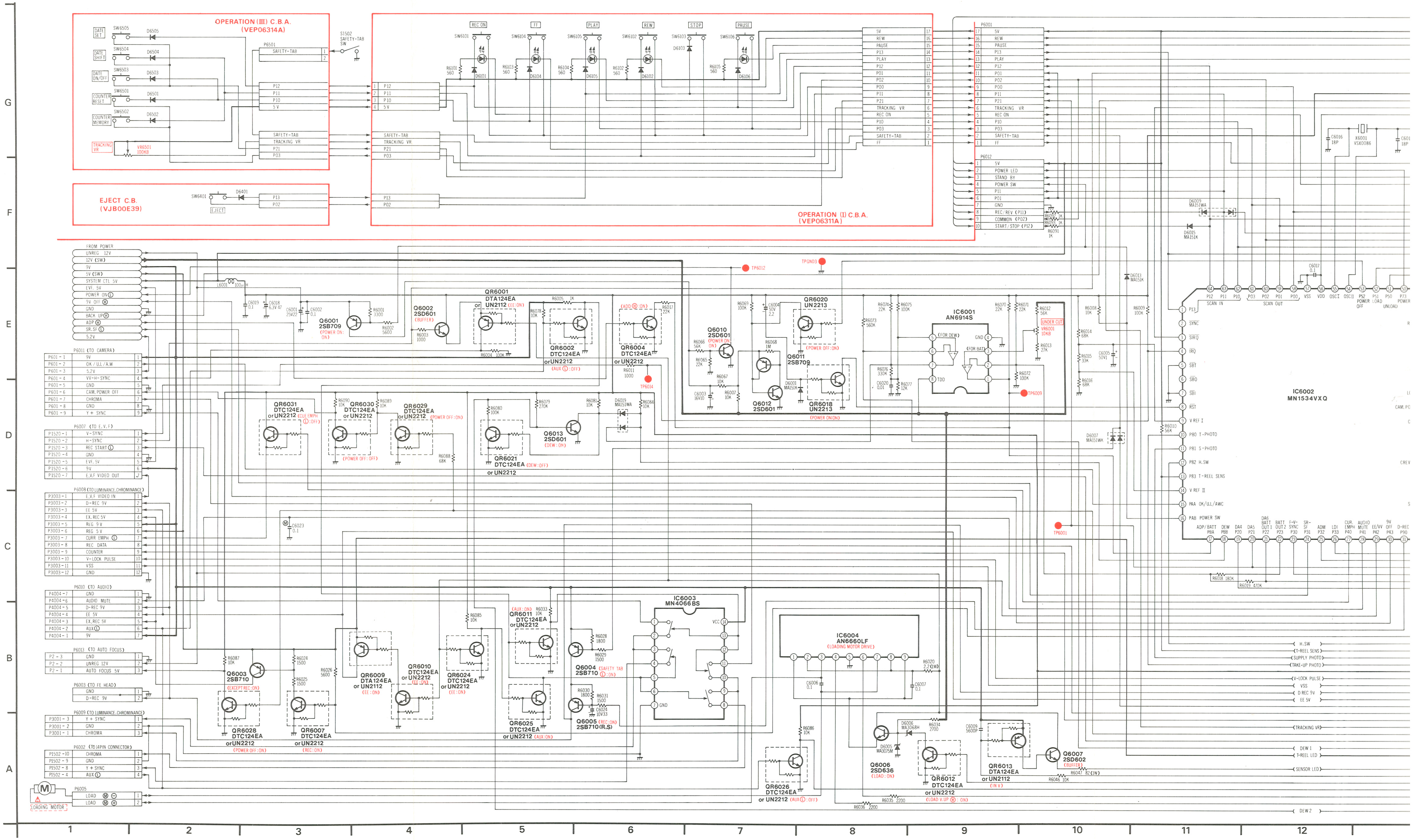
UN2212

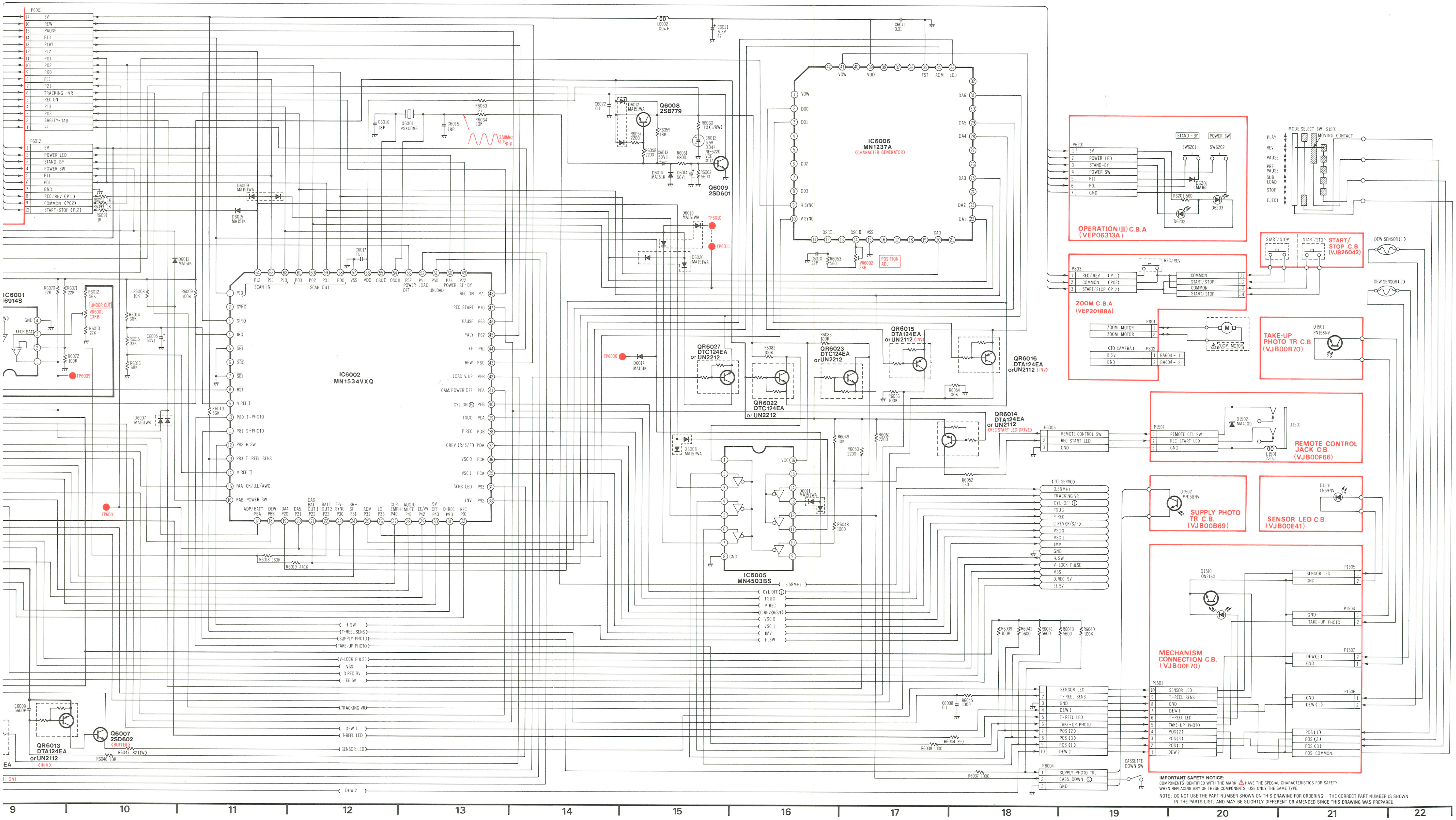
SYSTEM CONTROL ICs VOLTAGE CHART

REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8												
STOP	2.6	4.1	5.0	0	0.7	0	4.9	13.9												
PLAY	2.6	4.4	5.0	0	0.7	0	4.9	13.9												
REC	2.6	4.1	5.0	0	0.7	0	4.9	13.9												
F.F	2.6	4.1	5.0	0	0.7	0	4.9	13.9												
REW	2.6	4.1	5.0	0	0.7	0	4.9	13.9												
REF. NO.	IC6002																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.1	4.6	5.1	5.1	0	0.3	0	5.1	3.1	5.1	5.1	0	4.1	2.1	0.4	5.2	2.6	4.5	5.1	5.1
PLAY	5.1	4.6	0	5.1	0	0.3	0	5.1	3.1	5.1	5.1	2.1	—	2.1	0.1	5.2	2.6	4.5	5.1	5.1
REC	4.7	4.3	5.1	4.8	0	0.3	0	5.1	3.1	5.1	5.1	2.1	—	2.1	0.2	5.2	2.6	4.5	4.4	4.5
F.F	5.1	4.6	5.1	5.1	0	0.3	0	5.1	3.1	5.1	5.1	0	2.0	2.1	0.3	5.2	2.6	4.5	5.1	5.1
REW	5.1	4.6	5.1	5.1	0	0.3	0	5.1	3.1	5.1	5.1	0	2.0	2.1	0.3	5.2	2.6	4.5	5.1	5.1
REF. NO.	IC6002																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	3.0	3.1	5.1	5.1	0	0	5.1	5.1	4.9	0	9.3	4.1	0	9.2	0	5.1	2.1	5.1	5.1	0
PLAY	5.0	5.0	5.1	5.1	0	0	0	0	0	0	9.3	4.1	0	9.2	0	5.1	0	0	5.1	5.1
REC	2.7	2.7	5.1	5.1	2.7	0.4	5.1	0.1	4.9	0.1	0.7	0.2	0	9.2	0.1	5.1	0.1	5.1	5.1	5.1
F.F	3.0	3.1	5.1	5.1	0	0	5.1	5.1	4.9	0	9.3	4.1	0	7.6	5.1	5.1	0	5.1	5.1	0
REW	3.0	3.1	5.1	5.1	0	0	5.1	5.1	4.9	0	9.3	4.1	0	7.6	5.1	5.1	5.1	5.1	5.1	0
REF. NO.	IC6002																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	0	5.0	3.7	3.7	3.7	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0
PLAY	5.0	0	3.7	3.7	0.5	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0
REC	0	0.1	3.7	3.7	0.5	3.7	0.2	0.5	0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	4.6	4.5	5.0
F.F	0	5.0	3.7	0.5	3.7	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0
REW	0	5.0	0.5	3.7	3.7	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0
REF. NO.	IC6002																			
MODE	61	62	63	64																
STOP	5.1	5.1	5.1	5.0																
PLAY	5.1	5.1	5.1	5.0																
REC	4.7	4.3	4.5	4.7																
F.F	5.1	5.1	5.1	5.0																
REW	5.1	5.1	5.1	5.0																
REF. NO.	IC6003																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
PLAY	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
REC	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
F.F	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
REW	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
REF. NO.	IC6004																			
MODE	1	2	3	4	5	6	7	8	9											
STOP	6.4	13.9	0	4.4	0	4.4	0	13.9	6.4											
PLAY	6.9	13.9	0	4.4	0	4.4	0	13.9	6.9											
REC	6.9	13.9	0	4.4	0	4.4	0	13.9	6.9											
F.F	6.4	13.9	0	4.4	0	4.5	0	13.9	6.4											
REW	6.4	13.9	0	4.4	0	4.4	0	13.9	6.4											
REF. NO.	IC6005																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
STOP	5.1	0	4.8	5.2	4.8	5.2	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				
PLAY	5.1	5.2	4.8	0	4.8	0	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				
REC	4.4	5.2	4.8	0	4.1	0	4.0	0	4.8	5.2	4.4	0	4.3	0.7	4.7	5.2				
F.F	5.1	0	4.8	5.2	4.8	5.2	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				
REW	5.1	0	4.8	5.2	4.8	5.2	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				
REF. NO.	IC6006																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.2	0	0	0	0	0	0	0	0.6	5.1	0	2.7	0	2.7	0	5.2	0	0	0	5.1
PLAY	5.2	0	0	0	0	0	0	0	0.4	0	0	5.2	0	5.2	0	0	0	0	0	5.1
REC	5.2	2.8	0	0	0	0	0	0	0.1	5.1	0	3.1	0	3.1	0	5.2	0	0	0	4.5
F.F	5.2	0	0	0	0	0	0	0	0.6	0	0	2.7	0	2.7	0	5.2	0	0	0	5.1
REW	5.2	0	0	0	0	0	0	0	0	0	0	2.7	0	2.7	0	5.2	0	0	0	5.1
REF. NO.	IC6006																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	5.1	5.1	0	0	0	0	0	5.1	0	0	0	0	0	0	5.2	0	0	0	0
PLAY	0	5.1	5.1	0	5.1	0	0	5.1	5.1	0	5.0	0	0	0	0	5.2	0	0	5.2	0
REC	0	4.5	4.7	0	4.7	0	0	4.4	4.5	0	2.7	0	0.4	2.7	0	5.2	0	0	5.2	0
F.F	0	5.1	5.1	0	5.1	0	0	5.1	5.1	0	0	0	0	0	0	5.2	0	0	5.2	0
REW	0	5.1	5.1	0	5.1	0	0	5.1	0	0	3.0	0	0	0	0	5.2	0	0	0	0
REF. NO.	IC6006																			
MODE	41	42																		
STOP	0	0																		
PLAY	0	0																		
REC	0	0																		
F.F	0	0																		
REW	0	0																		

SYSTEM CONTROL SCHEMATIC	
Transistor	
Q1501	E-21
Q1502	C-20
Q1510	C-20
Q6001	E-3
Q6002	E-4
Q6003	B-3
Q6004	B-6
Q6005	A-6
Q6006	A-8
Q6007	A-10
Q6008	G-15
Q6009	F-15
Q6010	E-7
Q6011	E-7
Q6012	D-7
Q6013	D-5
Transistor & Resistor	
QR6001	E-5
QR6002	E-5
QR6004	E-6
QR6007	A-3
QR6009	B-4
QR6010	B-4
QR6011	B-5
QR6012	A-9
QR6013	A-9
QR6014	D-18
QR6015	E-17
QR6016	E-18
QR6018	D-8
QR6020	E-8
QR6021	D-5
QR6022	D-16
QR6023	E-16
QR6024	B-5
QR6025	A-5
QR6026	A-7
QR6027	E-15
QR6028	A-3
QR6029	D-4
QR6030	D-4
QR6031	D-3
Integrated Circuit	
IC6001	E-9
IC6002	D-12
IC6003	B-7
IC6004	B-8
IC6005	C-16
IC6006	F-17
Test Point	
TP6001	C-10
TP6006	E-14
TP6009	D-10
TP6010	F-15
TP6011	F-15
TP6012	E-7
TP6014	D-6
TP GND3	F-8

3-18. SYSTEM CONTROL SCHEMATIC DIAGRAM


OPERATION (III) C.B.A. (VEP06314A)
OPERATION (I) C.B.A. (VEP06311A)
EJECT C.B. (VJB00E39)
SW6401
EJECT
D6401
S1502 SAFETY-TAB SW
P6501
P6001
P6012
REC ON
FF
PLAY
REW
STOP
PAUSE
DATE SET
DATE SHIFT
DATE ON/OFF
COUNTER RESET
COUNTER MEMORY
TRACKING VR
VR6501 100KB
FROM POWER
P6011 (TO CAMERA)
P6007 (TO E.V.F)
P6008 (TO LUMINANCE, CHROMINANCE)
P6010 (TO AUDIO)
P6013 (TO AUTO FOCUS)
P6003 (TO FE HEAD)
P6009 (TO LUMINANCE, CHROMINANCE)
P6002 (TO 14PIN CONNECTOR)
P6005
LOADING MOTOR
QR6001 DTC124EA or UN2112 (EE:ON)
Q6002 2SD601 (BUFFER)
Q6001 2SB709 (POWER ON:ON)
QR6002 DTC124EA or UN2212 (AUX Ⓐ:OFF)
QR6004 DTC124EA or UN2212
QR6020 UN2213
Q6010 2SD601 (POWER ON:ON)
Q6011 2SB709
Q6012 2SD601
QR6018 UN2213 (POWER ON:ON)
IC6001 AN6914S
IC6002 MN1534VXQ
QR6031 DTC124EA or UN2212 (CUE EMPH Ⓒ:OFF)
QR6030 DTC124EA or UN2212 (POWER OFF:OFF)
QR6029 DTC124EA or UN2212 (POWER OFF:ON)
Q6013 2SD601 (DEW:ON)
QR6021 DTC124EA or UN2212 (DEW:OFF)
IC6003 MN4066BS
IC6004 AN6660LF (LOADING MOTOR DRIVE)
Q6003 2SB710 (EXCEPT REC:ON)
QR6028 DTC124EA or UN2212 (POWER OFF:ON)
QR6007 DTC124EA or UN2212 (REC:ON)
QR6009 DTA124EA or UN2112 (EE:ON)
QR6010 DTC124EA or UN2212 (EE:ON)
QR6024 DTC124EA or UN2212 (EE:ON)
QR6011 DTC124EA or UN2212 (AUX:ON)
QR6025 DTC124EA or UN2212 (AUX:ON)
Q6004 2SB710 (SAFETY TAB Ⓛ:ON)
Q6005 2SB710(R.S) (REC:ON)
QR6026 DTC124EA or UN2212 (AUX Ⓐ:OFF)
Q6006 2SD636 (LOAD:ON)
QR6012 DTC124EA or UN2212 (LOAD V.UP Ⓜ:ON)
QR6013 DTA124EA or UN2112 (INV)
Q6007 2SD602 (BUFFER)
X6001 VSX0086
TP6012
TPGND3
TP6014
TP6009
TP6001
1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G

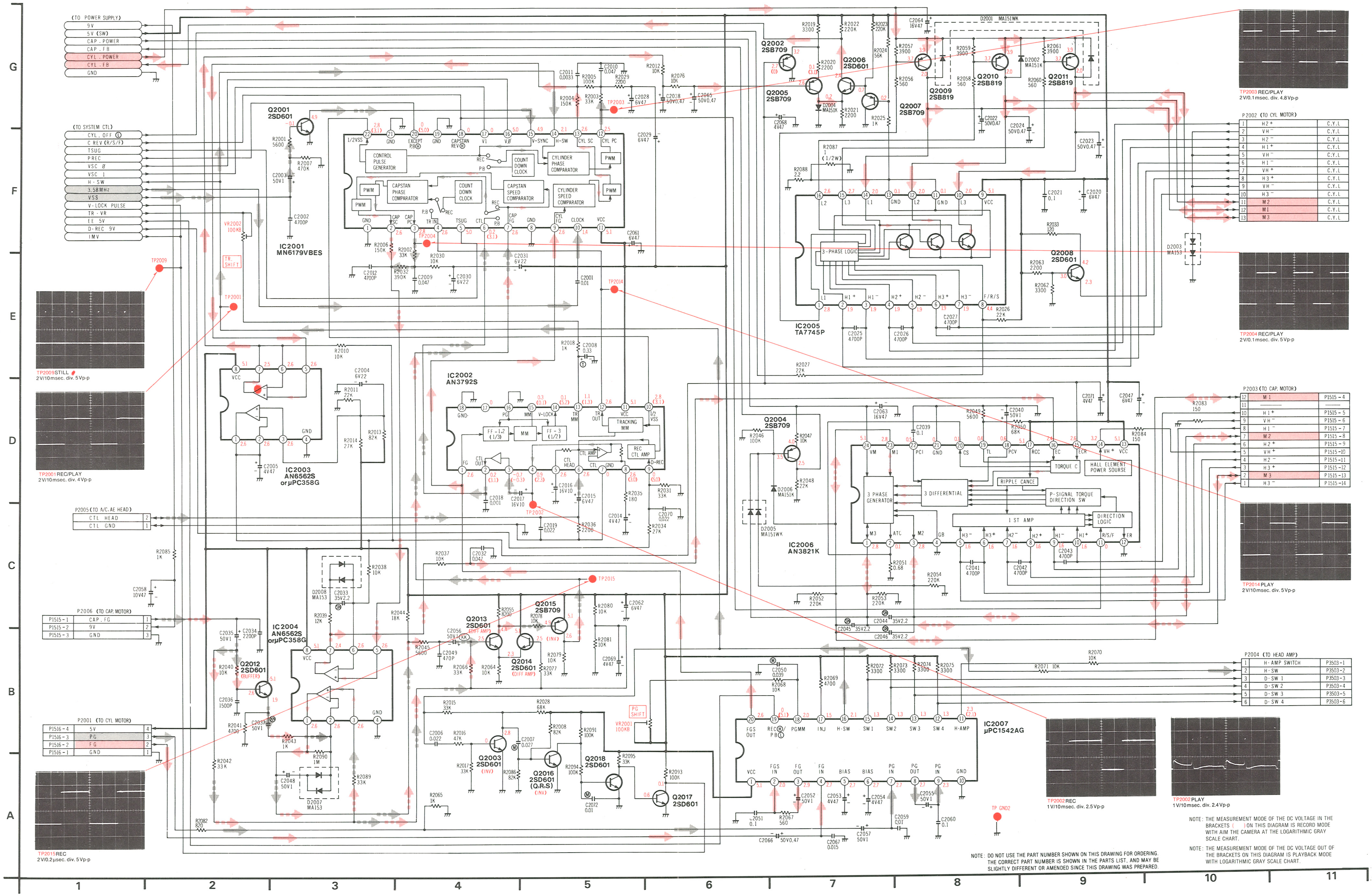

P6001
5V
REW
PAUSE
P13
PLAY
P12
P01
P02
P00
P11
P21
TRACKING VR
REC ON
P10
P03
SAFETY-TAB
FF
P6012
5V
POWER LED
STAND BY
POWER SW
P11
P01
GND
REC/REV (P11)
COMMON (P02)
START/STOP (P12)
IC6001
6914S
GND
(FOR BAT)
R6070 22K
R6071 22K
R6012 56K
UNDER CUT
VR6001 10KB
R6013 27K
R6072 100K
TP6009
TP6001
D6013 MA151K
D6009 MA151WA
D6015 MA151K
D6007 MA151WA
R6008 10K
R6014 68K
R6015 33K
C6005 50V1
R6016 68K
R6009 100K
R6010 56K
C6016 18P
X6001 VSX0086
C6015 18P
R6063
R6064 10K
3.58MHz
C6017 0.1
IC6002
MN1534VXQ
P13
SYNC
SIRQ
IRQ
SBT
SBO
SBI
RST
V REF I
P80 T-PHOTO
P81 S-PHOTO
P82 H.SW
P83 T-REEL SENS
V REF II
PAA OK/UL/AWC
PAB POWER SW
SCAN IN
SCAN OUT
VSS
VDD
OSC I
OSC II
POWER OFF
LOAD
UNLOAD
POWER ST-BY
REC ON P71
REC START P70
PAUSE P63
PALY P62
FF P61
REW P60
LOAD V.UP PFB
CAM.POWER OFF PFA
CYL ON PEB
TSUG PEA
P REC PDB
CREV (R/S/F) PDA
VSC 0 PCB
VSC 1 PCA
SENS LED P93
INV P92
ADP/BATT
DEW
DA4
DA5
DA6
BATT OUT I
BATT OUT 2
F-V-SYNC
SR-SF
ADM
LDI
CUR. EMPH
AUDIO MUTE
EE/VV
9V OFF
D-REC
R6018 180K
R6019 470K
TP6006
D6017 MA151K
C6022 0.1
D6012 MA151WA
Q6008 2SB779
R6057 2200
R6058 2200
R6059 18K
C6013 50V1
R6061 6800
R6060 10 (1/8W)
C6012 5.5V 0.047
VCE 0012
D6014 MA151K
C6014 50V1
R6062 5600
Q6009 2SD601
L6002 100μH
C6021 6.3V 47
C6011 0.01
D6010 MA151WA
TP6010
TP6011
D6020 MA151WA
IC6006
MN1237A
(CHARACTER GENERATOR)
VDW
VDD
TST
ADM
LDJ
D00
D01
D02
D03
H SYNC
V SYNC
OSC I
OSC II
VSS
DAO
DA1
DA2
DA3
DA4
DA5
DA6
C6010 22P
R6053 560
VR6002 2KB
POSITION ADJ
QR6027 DTC124EA or UN2212
QR6022 DTC124EA or UN2212
QR6023 DTC124EA or UN2212
QR6015 DTA124EA or UN2112 (INV)
QR6016 DTA124EA or UN2112 (INV)
QR6014 DTA124EA or UN2112 (REC START LED DRIVE)
R6082 100K
R6083 100K
R6054 100K
R6056 100K
R6049 10K
R6051 2200
R6050 2200
R6052 560
R6048 1000
D6008 MA151WA
D6011 MA151WA
IC6005
MN4503BS
VCC
GND
3.58MHz
CYL OFF
TSUG
P REC
C REV (R/S/F)
VSC 0
VSC 1
IMV
H.SW
T-REEL SENS
SUPPLY PHOTO
TAKE-UP PHOTO
V-LOCK PULSE
VSS
D REC 9V
EE 5V
TRACKING VR
DEW I
T-REEL LED
SENSOR LED
DEW 2
C6009 5600P
QR6013 DTA124EA or UN2112 (INV)
Q6007 2SD602 (BUFFER)
R6047 82 (1/4W)
R6046 10K
(TO SERVO)
3.58MHz
TRACKING VR
CYL OFF
TSUG
P REC
C REV (R/S/F)
VSC 0
VSC 1
IMV
GND
H.SW
V-LOCK PULSE
VSS
D.REC 9V
EE 5V
R6039 100K
R6042 5600
R6041 5600
R6043 5600
R6040 100K
C6008 0.1
R6045 1000
R6044 390
R6038 1000
R6037 1000
SENSOR LED
T-REEL SENS
GND
DEW I
T-REEL LED
TAKE-UP PHOTO
POS (2)
POS (3)
POS (1)
DEW 2
P6004
SUPPLY PHOTO TR.
CASS. DOWN
GND
CASSETTE DOWN SW
P6201
5V
POWER LED
STAND-BY
POWER SW
P11
P01
GND
STAND-BY
POWER SW
SW6201
SW6202
D5201 MA165
R6201 560
D6202
D6203
OPERATION (II) C.B.A
(VEP06313A)
MODE SELECT SW S1501
MOVING CONTACT
PLAY
REV
PAUSE
PRE PAUSE
SUB LOAD
STOP
EJECT
P803
REC/REV (P11)
COMMON (P02)
START/STOP (P12)
REC/REV
COMMON
START/STOP
ZOOM C.B.A
(VEP20188A)
P801
ZOOM MOTOR
ZOOM MOTOR
(TO CAMERA)
P802
8.6V
GND
BA604-1
BA604-2
START/STOP
START/STOP C.B (VJB26042)
DEW SENSOR (1)
DEW SENSOR (2)
TAKE-UP PHOTO TR C.B (VJB00B70)
Q1501 PN158NV
P6006
REMOTE CONTROL SW
REC START LED
GND
P1507
REMOTE CTL SW
REC START LED
GND
D1502 MA4100
J1501
L1501 220μ
REMOTE CONTROL JACK C.B. (VJB00F66)
Q1502 PN158NV
SUPPLY PHOTO TR C.B. (VJB00B69)
D1501 LN59NV
SENSOR LED C.B. (VJB00E41)
Q1510 ON2160
MECHANISM CONNECTION C.B. (VJB00F70)
P1505
SENSOR LED
GND
P1504
GND
TAKE-UP PHOTO
P1507
DEW (2)
GND
P1506
GND
DEW (1)
P1501
POS (1)
POS (2)
POS (3)
POS. COMMON
9
10
11
12
13
14
15
16
17
18
19
20
21
22

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-19. SERVO SCHEMATIC DIAGRAM

CYLINDER SERVO SPEED LOOP CYLINDER SERVO PHASE LOOP CAPSTAN SERVO SPEED LOOP CAPSTAN SERVO PHASE LOOP


(TO POWER SUPPLY)
9V
5V (SW)
CAP. POWER
CAP. FB
CYL. POWER
CYL. FB
GND
(TO SYSTEM CTL)
CYL. OFF
C REV (R/S/F)
TSUG
PREC
VSC ø
VSC I
H-SW
3.58MHz
VSS
V-LOCK PULSE
TR-VR
EE 5V
D-REC 9V
IMV
Q2001 2SD601
IC2001 MN6179VBES
CONTROL PULSE GENERATOR
COUNT DOWN CLOCK
CYLINDER PHASE COMPARATOR
CAPSTAN PHASE COMPARATOR
CAPSTAN SPEED COMPARATOR
CYLINDER SPEED COMPARATOR
PWM
Q2002 2SB709
Q2005 2SB709
Q2006 2SD601
Q2007 2SB709
Q2009 2SB819
Q2010 2SB819
Q2011 2SB819
D2001 MA151WK
D2004 MA151K
IC2005 TA7745P
3-PHASE LOGIC
Q2008 2SD601
D2003 MA153
P2002 (TO CYL MOTOR)
TP2003 REC/PLAY
2V/0.1msec. div. 4.8Vp-p
TP2004 REC/PLAY
2V/0.1msec. div. 5Vp-p
TP2009 STILL
2V/10msec. div. 5Vp-p
TP2001 REC/PLAY
2V/10msec. div. 4Vp-p
IC2003 AN6562S or μPC358G
IC2002 AN3792S
TRACKING MM
REC CTL AMP
P2005 (TO A/C.AE HEAD)
CTL HEAD
CTL GND
P2006 (TO CAP. MOTOR)
CAP. FG
9V
GND
P2001 (TO CYL MOTOR)
5V
PG
FG
GND
Q2004 2SB709
D2005 MA151WK
D2006 MA151K
IC2006 AN3821K
3 PHASE GENERATOR
3 DIFFERENTIAL
RIPPLE CANCEL
TORQUE C
HALL ELEMENT POWER SOURSE
P-SIGNAL TORQUE DIRECTION SW
1 ST AMP
DIRECTION LOGIC
P2003 (TO CAP. MOTOR)
TP2014 PLAY
2V/10msec. div. 5Vp-p
IC2004 AN6562S or μPC358G
Q2012 2SD601 (BUFFER)
Q2013 2SD601 (DIFF AMP)
Q2014 2SD601 (DIFF AMP)
Q2015 2SB709 (INV)
Q2003 2SD601 (INV)
Q2016 2SD601 (Q.R.S) (INV)
Q2018 2SD601
Q2017 2SD601
D2007 MA153
D2008 MA153
VR2001 100KB
VR2002 100KB
TR. SHIFT
PG SHIFT
TP2015 REC
2V/0.2μsec. div. 5Vp-p
IC2007 μPC1542AG
P2004 (TO HEAD AMP)
H-AMP SWITCH
H-SW
D-SW 1
D-SW 2
D-SW 3
D-SW 4
TP2002 REC
1V/10msec. div. 2.5Vp-p
TP2002 PLAY
1V/10msec. div. 2.4Vp-p
TP GND2
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

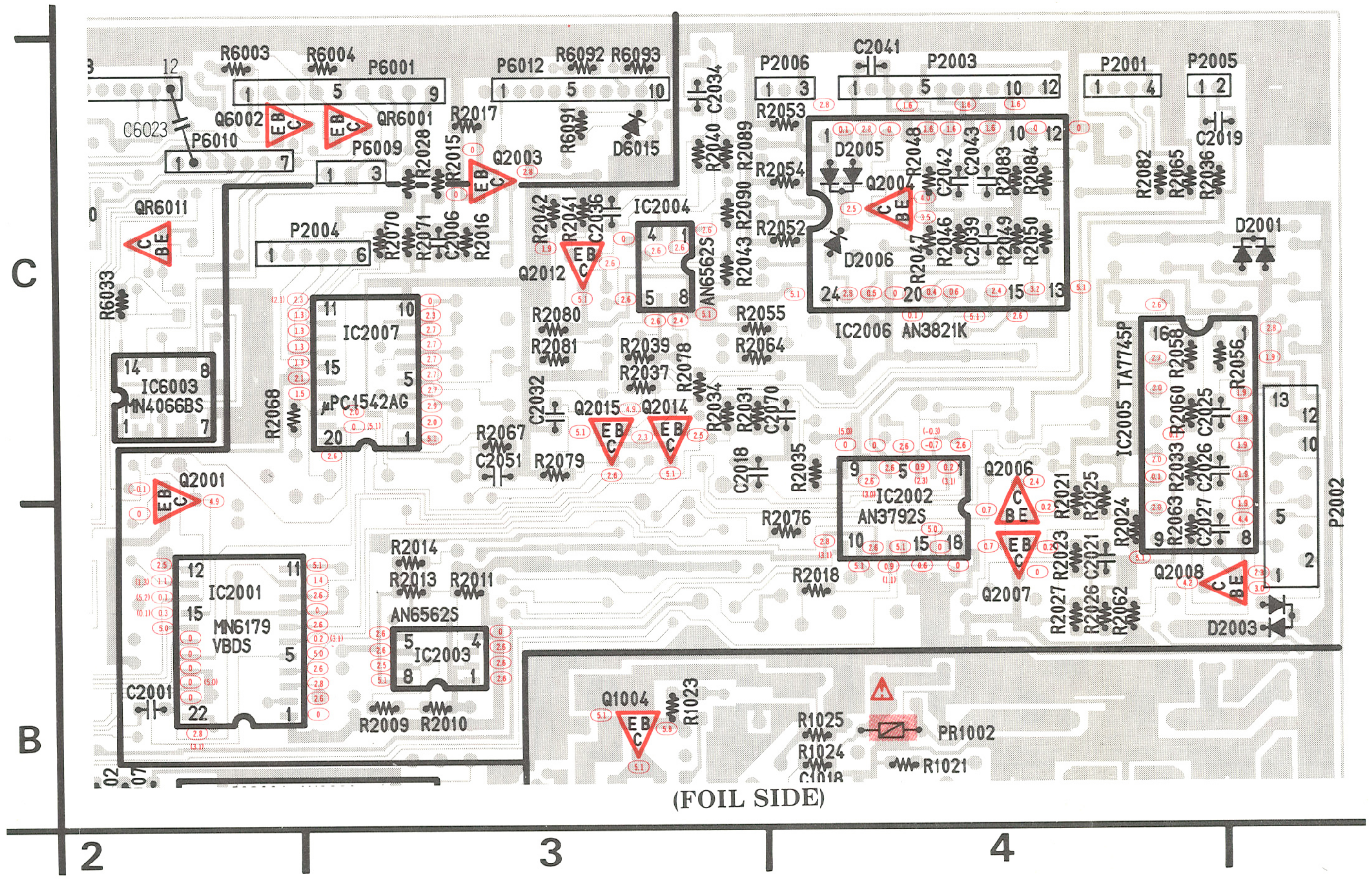
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH LOGARITHMIC GRAY SCALE CHART.

SERVO SCHEMATIC	
Transistor	
Q2001	F-3
Q2002	G-7
Q2003	A-4
Q2004	D-7
Q2005	G-7
Q2006	G-7
Q2007	G-8
Q2008	E-9
Q2009	G-8
Q2010	G-8
Q2011	G-9
Q2012	B-2
Q2013	C-4
Q2014	B-5
Q2015	C-5
Q2016	A-5
Integrated Circuit	
IC2001	E-3
IC2002	D-4
IC2003	D-3
IC2004	B-3
IC2005	E-7
IC2006	C-7
IC2007	B-8
Test Point	
TP2001	E-2
TP2002	C-5
TP2003	G-5
TP2004	F-4
TP2009	E-2
TP2014	E-5
TP2015	C-5
TP GND2	A-8
Adjustment	
VR2001	B-5
VR2002	F-2
Connector	
P2001	B-1
P2002	F-10
P2003	D-10
P2004	B-10
P2005	C-1
P2006	C-1

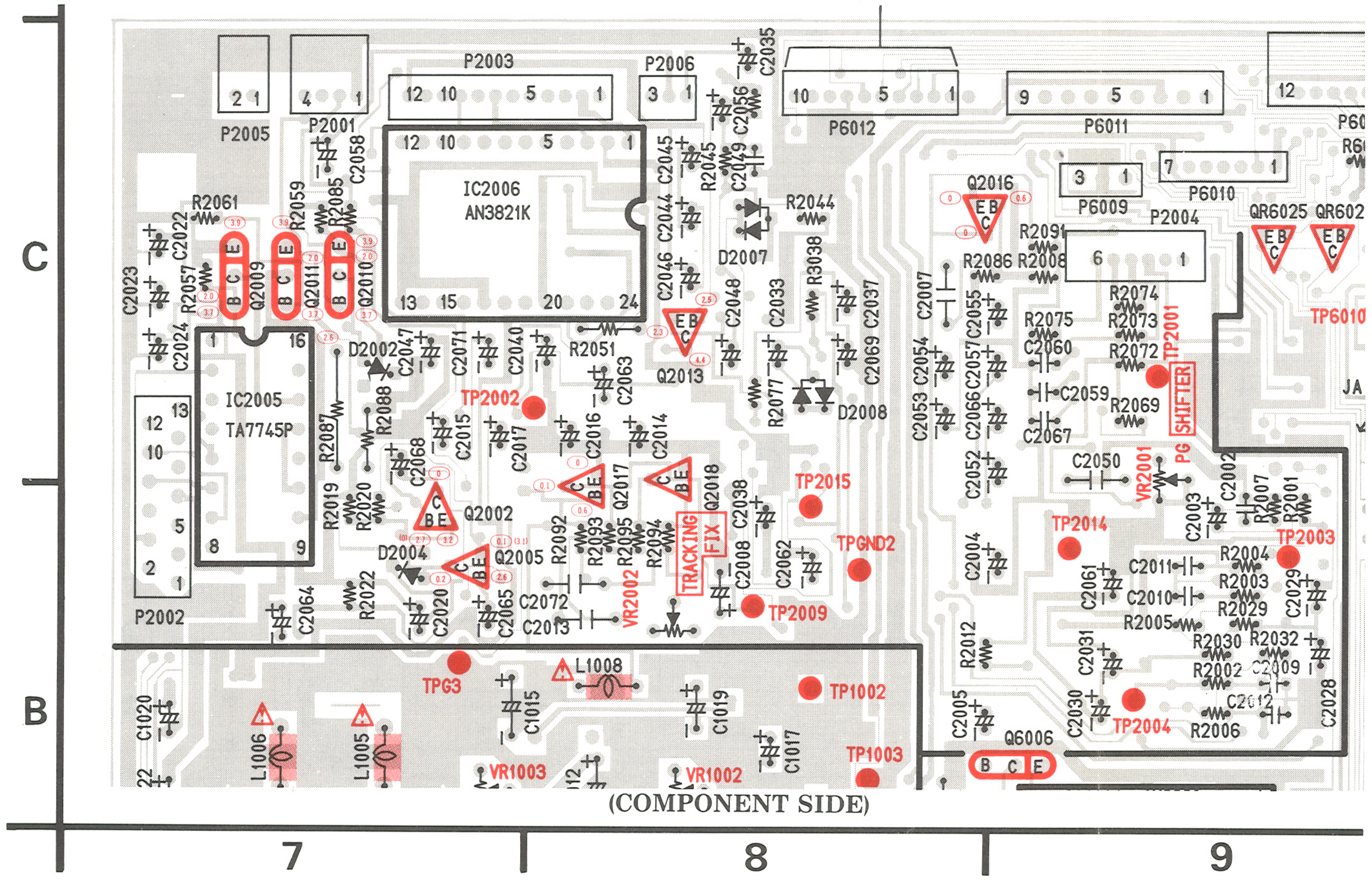
ADDRESS INFORMATION

Back Page:
SYSTEM CONTROL Section

3-20. SERVO in Main Circuit Board (VEP06336A)


C
B
2
3
4
IC2001
MN6179VBDS
IC2002
AN3792S
IC2003
AN6562S
IC2004
AN6562S
IC2005 TA7745P
IC2006 AN3821K
IC2007
μPC1542AG
IC6003
MN4066BS
P6001
P6010
P6012
P2001
P2002
P2003
P2004
P2005
P2006
Q2001
Q2003
Q2004
Q2006
Q2007
Q2008
Q2012
Q2014
Q2015
Q1004
QR6001
QR6011
Q6002
D2001
D2003
D2005
D2006
D6015
PR1002

(FOIL SIDE)

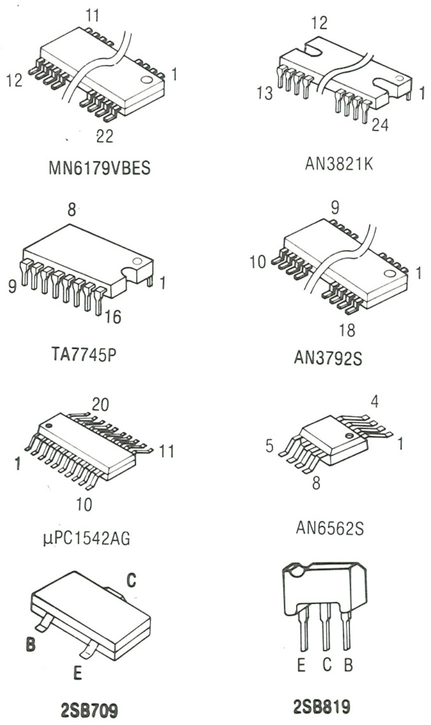

C
B
7
8
9
IC2005
TA7745P
IC2006
AN3821K
P2001
P2002
P2003
P2004
P2005
P2006
P6009
P6010
P6011
P6012
Q2002
Q2005
Q2009
Q2010
Q2011
Q2013
Q2016
Q2017
Q2018
Q6006
QR6025
D2002
D2004
D2007
D2008
TP2001
TP2002
TP2003
TP2004
TP2009
TP2014
TP2015
TPGND2
TP1002
TP1003
TPG3
TP6010
VR2001
VR2002
VR1002
VR1003
L1005
L1006
L1008
TRACKING FIX
PG SHIFTER

(COMPONENT SIDE)

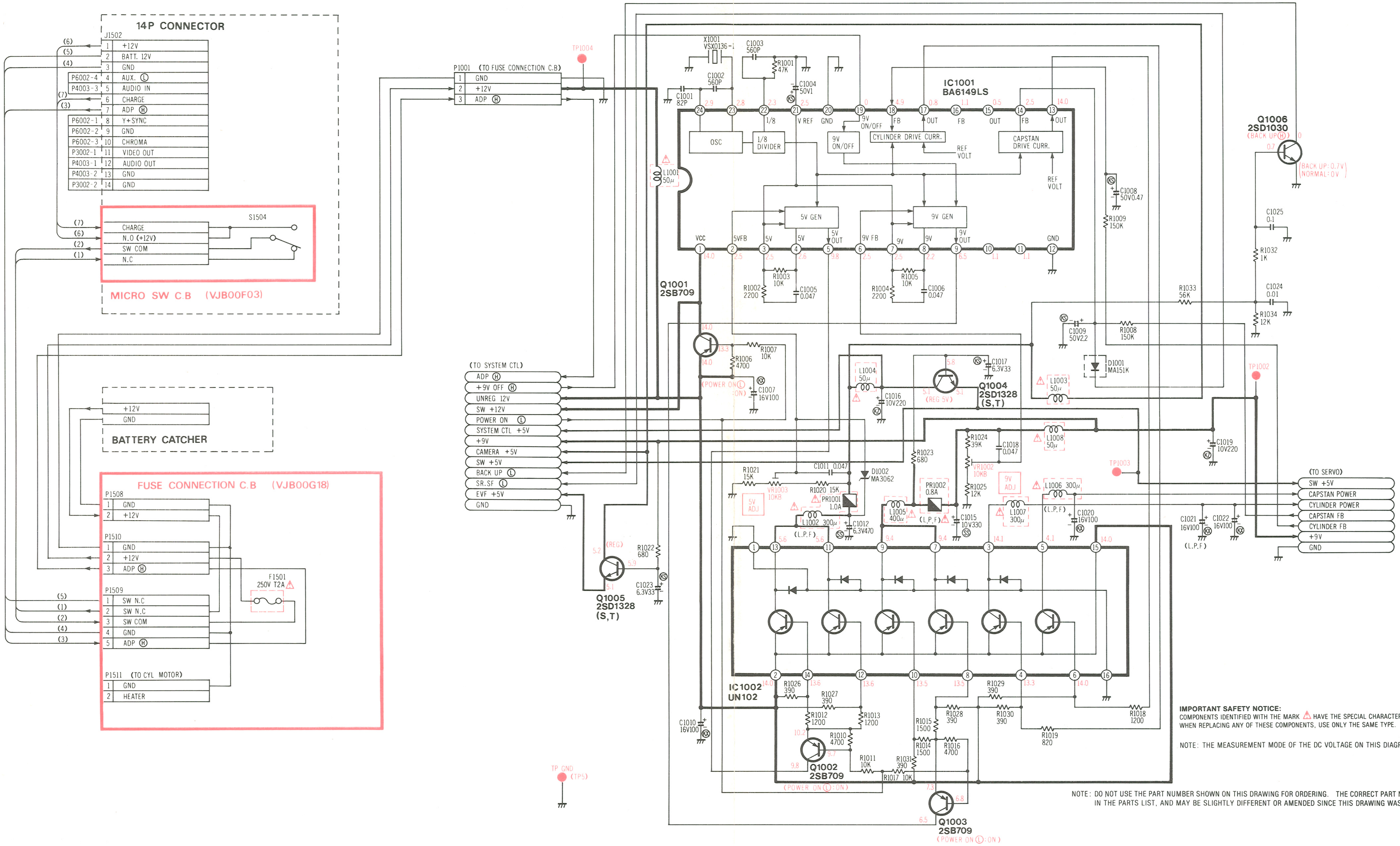
SERVO CIRCUIT BOARD	
Transistor	
Q2001	C-2 Ⓕ
Q2002	B-7 Ⓒ
Q2003	C-3 Ⓕ
Q2004	C-4 Ⓕ
Q2005	B-7 Ⓒ
Q2006	C-4 Ⓕ
Q2007	B-4 Ⓕ
Q2008	B-4 Ⓕ
Q2009	C-7 Ⓒ
Q2010	C-7 Ⓒ
Q2011	C-7 Ⓒ
Q2012	C-3 Ⓕ
Q2013	C-8 Ⓒ
Q2014	C-3 Ⓕ
Q2015	C-3 Ⓕ
Q2016	C-8 Ⓒ
Q2017	B-8 Ⓒ
Q2018	B-8 Ⓒ
Integrated Circuit	
IC2001	B-2 Ⓕ
IC2002	C-4 Ⓕ
IC2003	B-3 Ⓕ
IC2004	C-3 Ⓕ
IC2005	C-7 Ⓒ
IC2005	C-4 Ⓕ
IC2006	C-7 Ⓒ
IC2006	C-4 Ⓒ
IC2007	C-3 Ⓕ
Test Point	
TP2001	C-9 Ⓒ
TP2002	C-8 Ⓒ
TP2003	B-9 Ⓒ
TP2004	B-9 Ⓒ
TP2009	B-8 Ⓒ
TP2014	B-9 Ⓒ
TP2015	B-8 Ⓒ
TP GND2	B-8 Ⓒ
Adjustment	
VR2001	B-9 Ⓒ
VR2002	B-8 Ⓒ

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

ICs & TRANSISTORs INFORMATION


11
12
1
22
MN6179VBES
12
13
1
24
AN3821K
8
9
1
16
TA7745P
9
10
1
18
AN3792S
20
1
11
10
μPC1542AG
4
5
1
8
AN6562S
C
B
E
2SB709
E C B
2SB819

3-21. POWER SUPPLY SCHEMATIC DIAGRAM

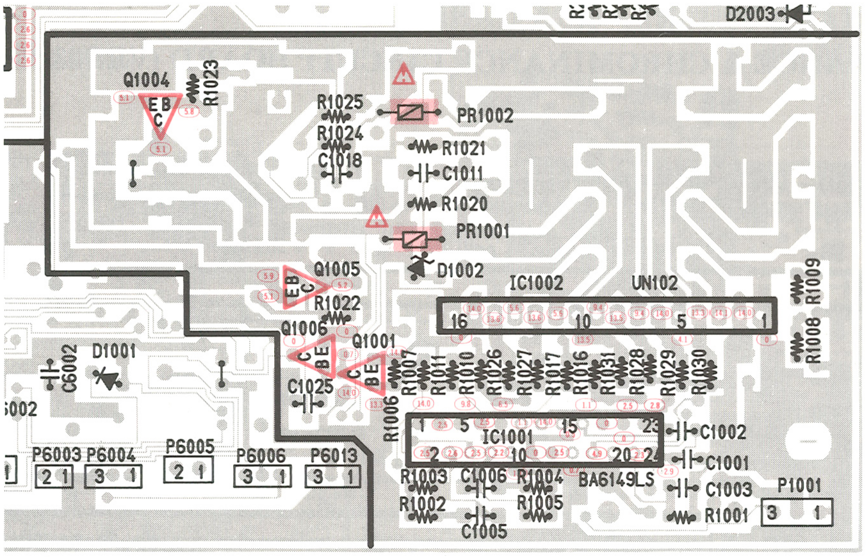

14P CONNECTOR
J1502
+12V
BATT. 12V
GND
AUX. Ⓛ
AUDIO IN
CHARGE
ADP Ⓗ
Y+SYNC
GND
CHROMA
VIDEO OUT
AUDIO OUT
GND
GND
P6002-4
P4003-3
P6002-1
P6002-2
P6002-3
P3002-1
P4003-1
P4003-2
P3002-2
S1504
CHARGE
N.O (+12V)
SW COM
N.C
MICRO SW C.B (VJB00F03)
BATTERY CATCHER
+12V
GND
FUSE CONNECTION C.B (VJB00G18)
P1508
P1510
P1509
SW N.C
SW COM
F1501
250V T2A
P1511 (TO CYL MOTOR)
HEATER
P1001 (TO FUSE CONNECTION C.B)
TP1004
(TO SYSTEM CTL)
ADP Ⓗ
+9V OFF Ⓗ
UNREG 12V
SW +12V
POWER ON Ⓛ
SYSTEM CTL +5V
+9V
CAMERA +5V
SW +5V
BACK UP Ⓛ
SR.SF Ⓛ
EVF +5V
GND
X1001
VSX0136-1
C1001 82P
C1002 560P
C1003 560P
R1001 47K
C1004 50V1
IC1001
BA6149LS
OSC
1/8 DIVIDER
9V ON/OFF
CYLINDER DRIVE CURR.
REF VOLT
CAPSTAN DRIVE CURR.
5V GEN
9V GEN
VCC
5VFB
9V FB
GND
L1001 50μ
Q1001 2SB709
R1002 2200
R1003 10K
C1005 0.047
R1004 2200
R1005 10K
C1006 0.047
R1006 4700
R1007 10K
C1007 16V100
(POWER ON Ⓛ:ON)
L1004 50μ
C1016 10V220
Q1004 2SD1328 (S,T)
(REG 5V)
C1017 6.3V33
C1008 50V0.47
R1009 150K
C1009 50V2.2
R1008 150K
D1001 MA151K
L1003 50μ
Q1006 2SD1030
(BACK UP Ⓗ)
(BACK UP: 0.7V NORMAL: 0V)
C1025 0.1
R1032 1K
C1024 0.01
R1034 12K
R1033 56K
TP1002
C1019 10V220
TP1003
R1024 39K
C1018 0.047
L1008 50μ
R1023 680
VR1002 10KB
R1025 12K
PR1002 0.8A
L1006 300μ
L1007 300μ
C1020 16V100
C1015 10V330
L1005 400μ
(L.P.F)
R1021 15K
VR1003 10KB
5V ADJ
9V ADJ
R1020 15K
C1011 0.047
D1002 MA3062
PR1001 1.0A
L1002 300μ
C1012 6.3V470
C1021 16V100
C1022 16V100
(TO SERVO)
SW +5V
CAPSTAN POWER
CYLINDER POWER
CAPSTAN FB
CYLINDER FB
+9V
GND
Q1005 2SD1328 (S,T)
(REG)
R1022 680
C1023 6.3V33
IC1002 UN102
R1026 390
R1027 390
R1012 1200
R1013 1200
R1010 4700
R1011 10K
R1015 1500
R1014 1500
R1016 4700
R1031 390
R1017 10K
R1028 390
R1029 390
R1030 390
R1019 820
R1018 1200
C1010 16V100
Q1002 2SB709
(POWER ON Ⓛ:ON)
Q1003 2SB709
(POWER ON Ⓛ:ON)
TP GND (TP5)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

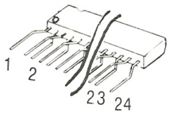
3-22. POWER SUPPLY in Main Circuit Board (VEP06336A)



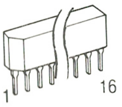
D2003
Q1004
R1023
R1025
R1024
C1018
PR1002
R1021
C1011
R1020
PR1001
D1002
Q1005
R1022
Q1006
Q1001
IC1002
UN102
R1009
R1008
D1001
C6002
C1025
R1006
R1007
R1011
R1010
R1026
R1027
R1017
R1016
R1031
R1028
R1029
R1030
IC1001
C1002
C1001
C1003
R1001
P1001
R1003
C1006
R1004
BA6149LS
R1002
R1005
C1005
P6003
P6004
P6005
P6006
P6013

(FOIL SIDE)

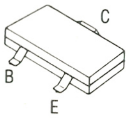
ICs & TRANSISTORs INFORMATION



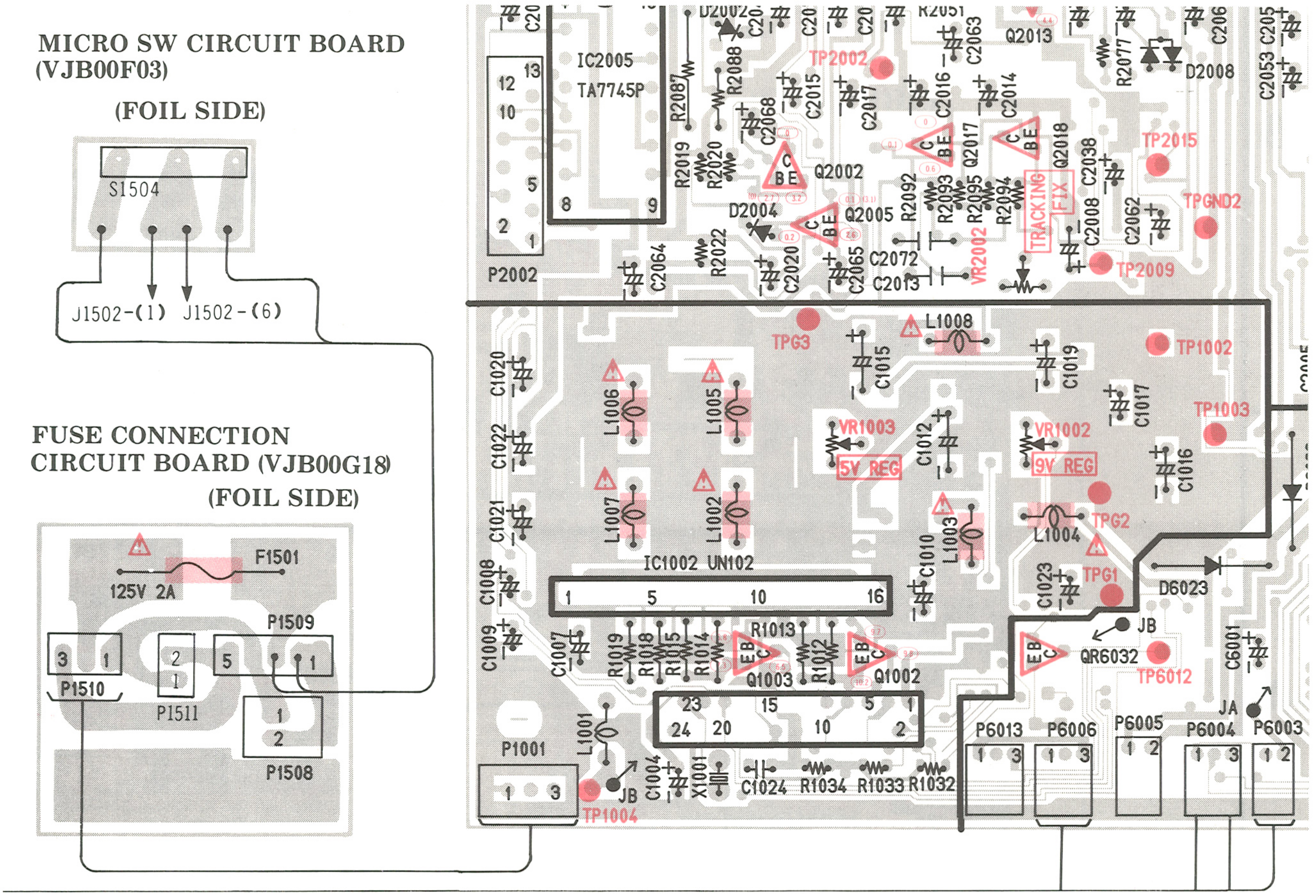
BA6149LS



UN102



2SB709
2SD1328
2SD1030



MICRO SW CIRCUIT BOARD (VJB00F03)

(FOIL SIDE)

FUSE CONNECTION CIRCUIT BOARD (VJB00G18)

(FOIL SIDE)

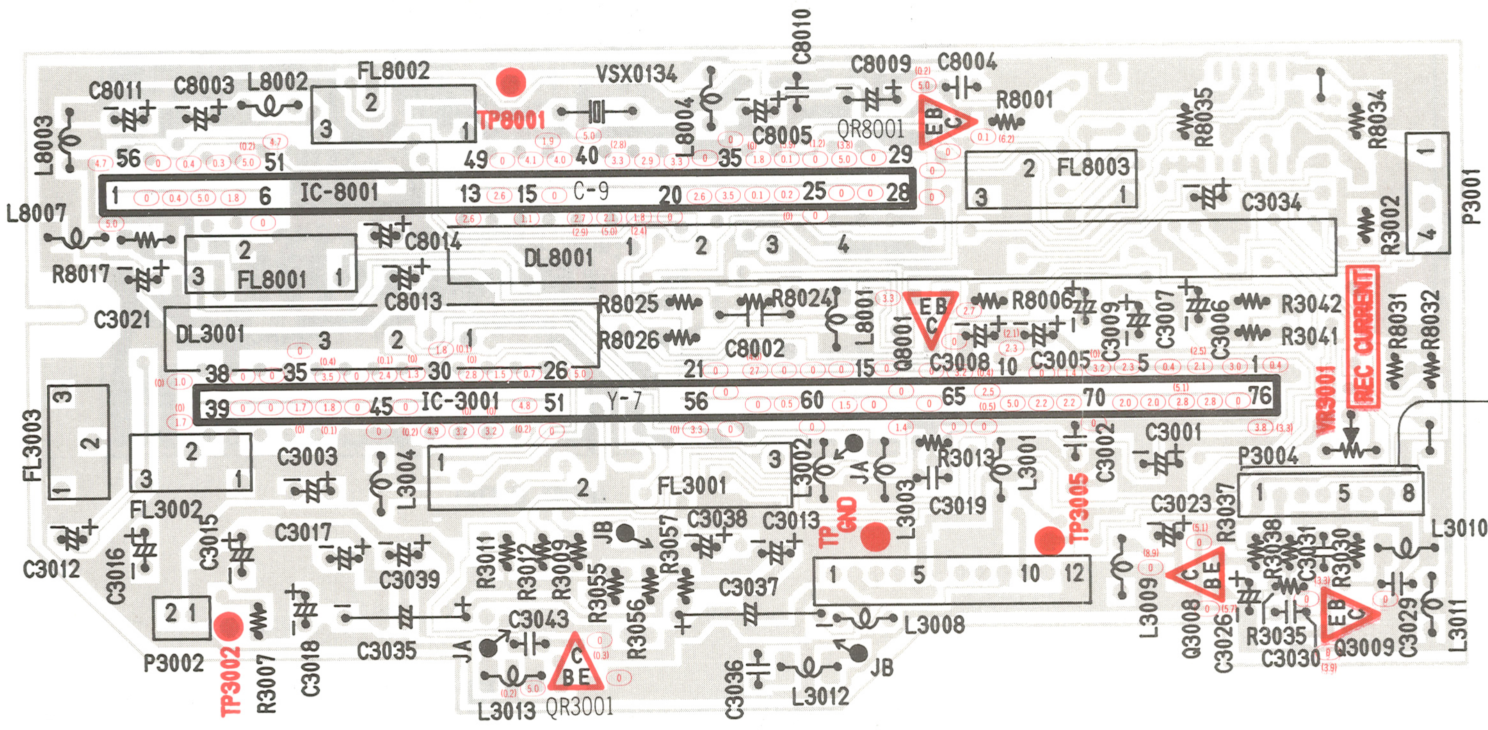
S1504
J1502-(1)
J1502-(6)
F1501
125V 2A
P1509
P1510
P1511
P1508
IC2005
TA7745P
P2002
R2087
R2088
C2068
C2015
C2017
C2016
C2063
C2014
Q2013
R2077
D2008
C2053
C2052
TP2002
TP2015
TPGND2
TP2009
R2019
R2020
Q2002
Q2017
Q2018
C2038
D2004
Q2005
R2092
R2093
R2095
R2094
TRACKING FIX
VR2002
C2008
C2062
C2064
R2022
C2020
C2065
C2072
C2073
TPG3
L1008
C1015
C1019
TP1002
TP1003
C1020
C1022
C1021
C1008
C1009
L1006
L1005
L1007
L1002
VR1003
5V REG
C1012
VR1002
9V REG
C1017
C1016
L1003
C1010
L1004
TPG2
TPG1
C1023
D6023
IC1002 UN102
R1013
Q1003
Q1002
JB
QR6032
TP6012
C6001
JA
P1001
L1001
C1004
X1001
C1024
R1034
R1033
R1032
TP1004
C1007
R1019
R1018
R1015
R1014
R1012
P6013
P6006
P6005
P6004
P6003

(COMPONENT SIDE)

Next Page:
LUMINANCE, CHROMINANCE & HEAD AMP Section

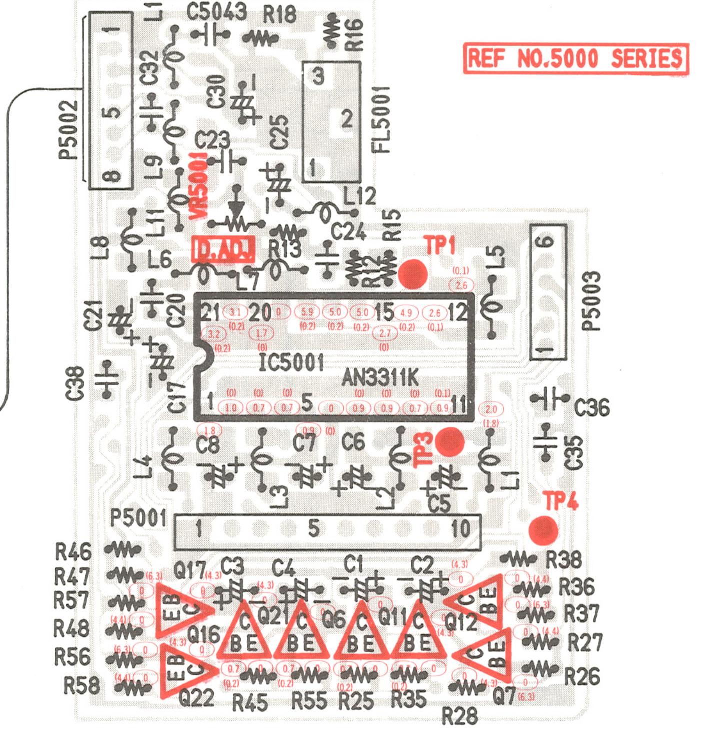
3-23. LUMINANCE, CHROMINANCE & HEAD AMP CIRCUIT BOARD (VEP03297A, VEP05073B)

LUMINANCE & CHROMINANCE CIRCUIT BOARD (VEP03297A) (COMPONENT SIDE)



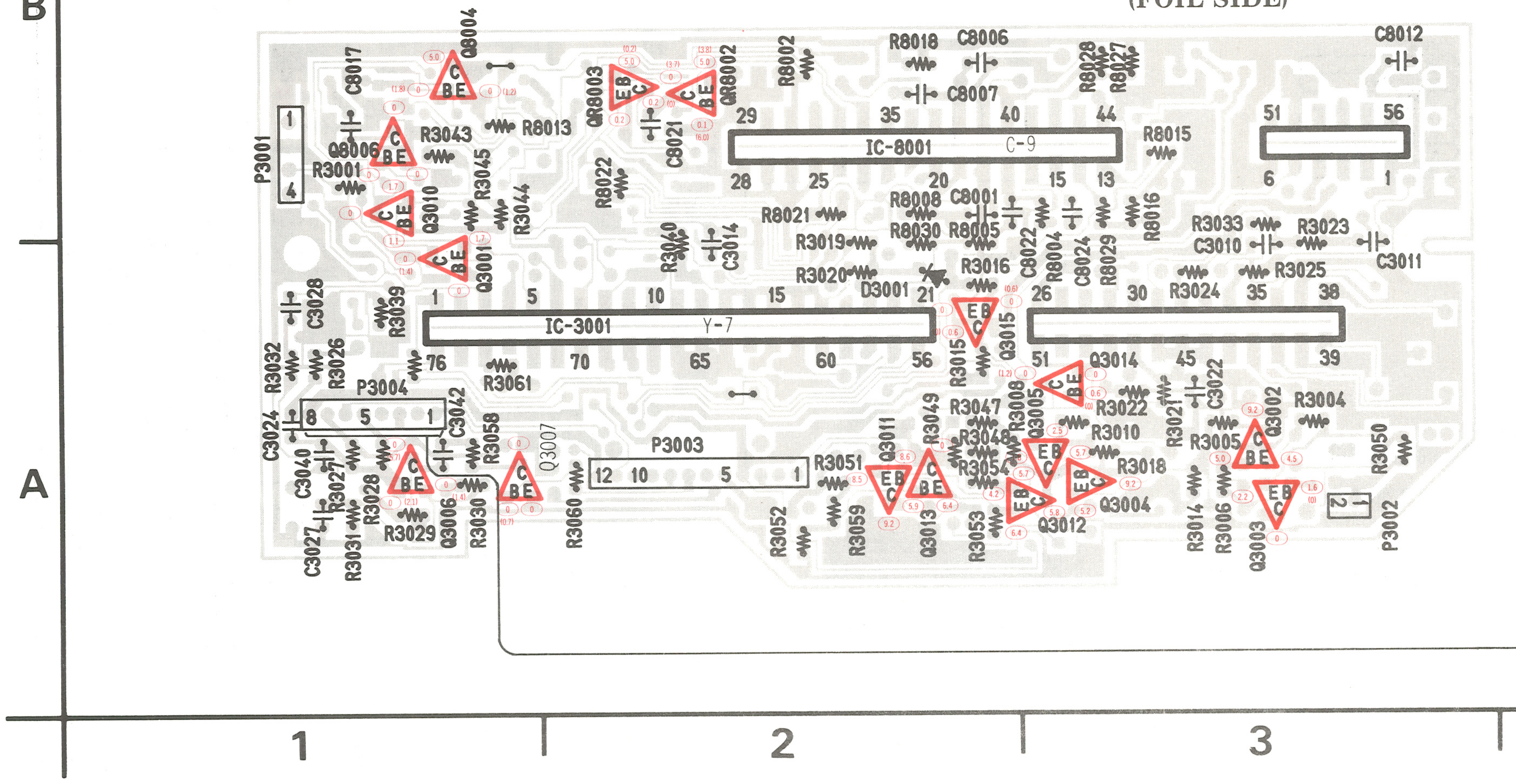
C
IC-8001
C-9
IC-3001
Y-7
FL8001
FL8002
FL8003
FL3001
FL3002
FL3003
DL8001
DL3001
TP8001
TP3002
TP3005
TP GND
REC CURRENT
VR3001
P3001
P3002
P3004
QR8001
QR3001

HEAD AMP CIRCUIT BOARD (VEP05073B)
(COMPONENT SIDE)



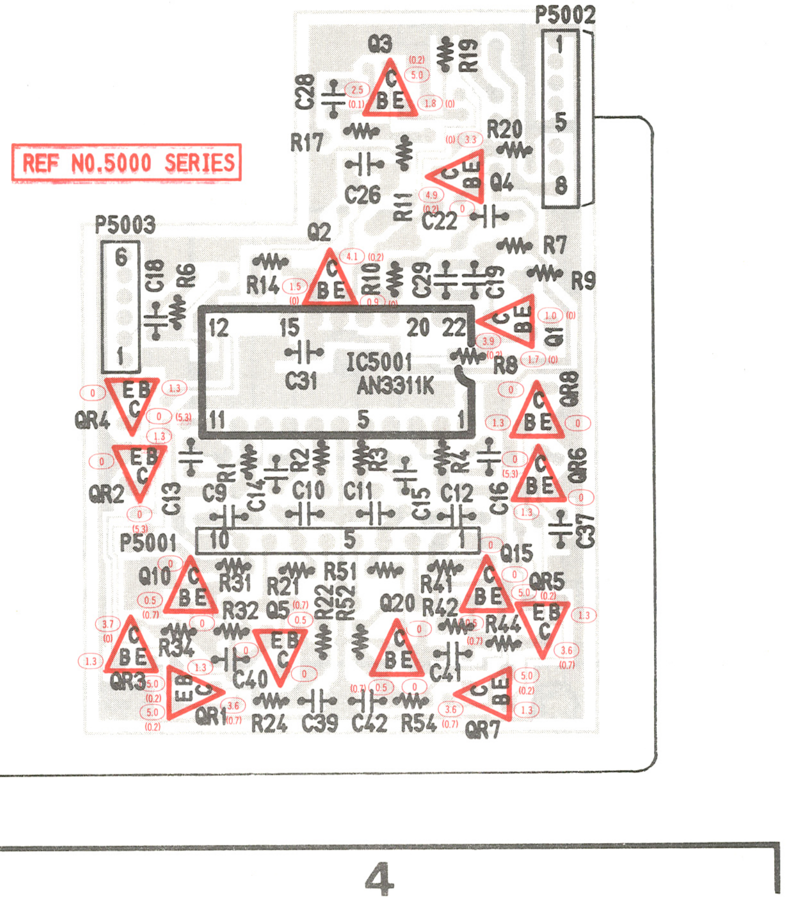
REF NO.5000 SERIES
IC5001
AN3311K
VR5001
D.ADJ
TP1
TP3
TP4
FL5001
P5001
P5002
P5003

(FOIL SIDE)



B
A
1
2
3
IC-8001
C-9
IC-3001
Y-7
P3001
P3002
P3003
P3004

(FOIL SIDE)



REF NO.5000 SERIES
IC5001
AN3311K
P5001
P5002
P5003
4

LUMINANCE, CHROMINANCE & HEAD AMP CIRCUIT BOARD

Transistor		
Q3001	A-1	Ⓕ
Q3002	A-3	Ⓕ
Q3003	A-3	Ⓕ
Q3004	A-3	Ⓕ
Q3005	A-3	Ⓕ
Q3006	A-1	Ⓕ
Q3007	A-1	Ⓕ
Q3008	B-3	Ⓒ
Q3009	B-3	Ⓒ
Q3010	B-1	Ⓕ
Q3011	A-2	Ⓕ
Q3012	A-3	Ⓕ
Q3013	A-2	Ⓕ
Q3014	A-3	Ⓕ
Q3015	A-2	Ⓕ
Q5001	A-4	Ⓕ
Q5002	B-4	Ⓕ
Q5003	B-4	Ⓕ
Q5004	B-4	Ⓕ
Q5005	A-4	Ⓕ
Q5006	B-4	Ⓒ
Q5007	B-4	Ⓒ
Q5010	A-4	Ⓕ
Q5011	B-4	Ⓒ
Q5012	B-4	Ⓕ
Q5015	A-4	Ⓕ
Q5016	B-4	Ⓒ
Q5017	B-4	Ⓒ
Q5020	A-4	Ⓕ
Q5021	B-4	Ⓒ
Q5022	B-4	Ⓒ
Q8001	C-2	Ⓒ
Q8004	B-1	Ⓕ
Q8005	C-3	Ⓒ
Q8006	B-1	Ⓕ

Transistor & Resistor		
QR3001	B-2	Ⓒ
QR5001	A-4	Ⓕ
QR5002	A-4	Ⓕ
QR5003	A-4	Ⓕ
QR5004	A-4	Ⓕ
QR5005	A-4	Ⓕ
QR5006	A-4	Ⓕ
QR5007	A-4	Ⓕ
QR5008	A-4	Ⓕ
QR8001	C-2	Ⓒ
QR8002	B-2	Ⓕ
QR8003	B-2	Ⓕ

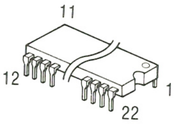
Integrated Circuit		
IC3001	C-2	Ⓒ
IC3001	A-2	Ⓕ
IC5001	C-4	Ⓒ
IC5001	A-4	Ⓕ
IC8001	C-2	Ⓒ
IC8001	B-2	Ⓕ

Test Point		
TP3001	C-4	Ⓒ
TP3002	B-1	Ⓒ
TP3003	C-4	Ⓒ
TP3004	C-4	Ⓒ
TP3005	B-3	Ⓒ
TP8001	C-2	Ⓒ
TP GND	B-2	Ⓒ

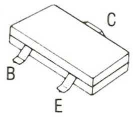
Adjustment		
VR3001	C-3	Ⓒ
VR5001	C-4	Ⓒ

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

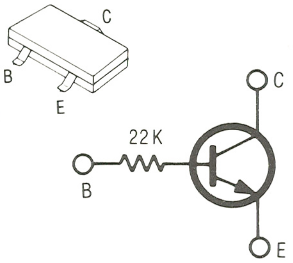
ICs & TRANSISTORs INFORMATION



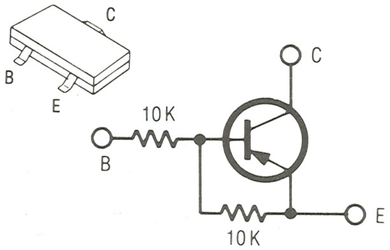
AN3311K



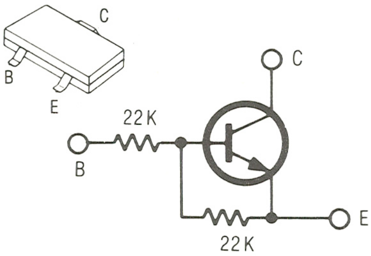
2SC1621
2SD602
2SB710
2SD601
2SC2404
2SB709
2SD1328



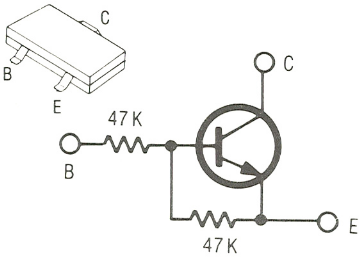
UN2217



UN2111

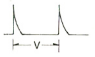
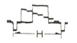
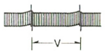
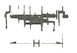
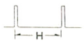
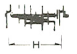
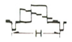
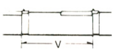
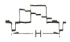
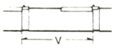
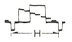
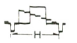
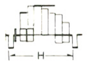
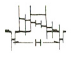
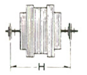
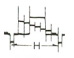
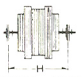
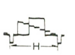
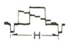
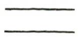


UN2212

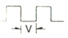
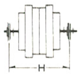
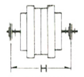
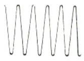
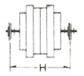
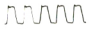
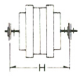
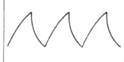
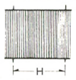
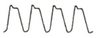
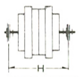
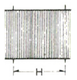
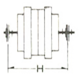
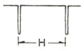
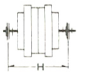
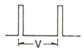
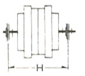
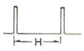
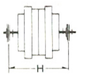
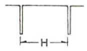
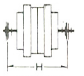


UN2213

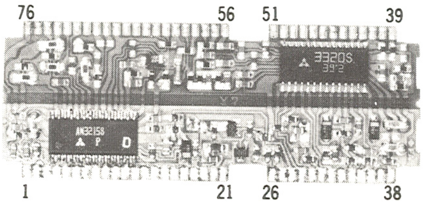
IC3001 (VEFY007)

PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
1	 2.0 Vp-p (REC/P.B)	29	 0.28 Vp-p (P.B)
3	 4.4 Vp-p (REC)	38	 0.22 Vp-p (P.B)
4	 4.7 Vp-p (REC/P.B)	39	 0.25 Vp-p (P.B)
5	 0.9 Vp-p (REC)	41	 0.5 Vp-p (P.B)
7	 0.3 Vp-p (P.B)	42	 0.56 Vp-p (P.B)
10	 2.0 Vp-p (REC)	61	 0.3 Vp-p (REC) 0.35 Vp-p (P.B)
10	 0.8 Vp-p (P.B)	63	 0.8 Vp-p (REC/P.B)
19	 120 mVp-p (REC) 0.44 Vp-p (P.B)	68	 0.8 Vp-p (REC)
20	 0.34 Vp-p (REC) 0.48 Vp-p (P.B)	69	 0.3 Vp-p (REC)
28	 0.34 Vp-p (REC/P.B)	76	 1 Vp-p (REC)

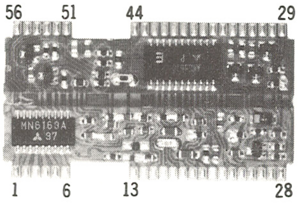
IC8001 (VEFC009)

PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
5	 3.8 Vp-p (REC/P.B)	34	 0.18 Vp-p (P.B)
16	 0.2 Vp-p (REC)	38	 0.58 Vp-p (REC/P.B)
17	 1 Vp-p (REC) 0.8 Vp-p (P.B)	39	 0.68 Vp-p (REC) 0.6 Vp-p (P.B)
18	 1.7 Vp-p (P.B)	41	 0.52 Vp-p (REC/P.B)
20	 170 mVp-p (REC/P.B)	43	 0.66 Vp-p (REC) 0.68 Vp-p (P.B)
22	 0.5 Vp-p (REC) 0.68 Vp-p (P.B)	44	 0.32 Vp-p (REC) 0.3 Vp-p (P.B)
23	 0.4 Vp-p (REC) 0.48 Vp-p (P.B)	51	 4.8 Vp-p (REC/P.B)
24	 130 mVp-p (P.B)	53	 4.8 Vp-p (REC/P.B)
30	 1.8 Vp-p (P.B)	54	 4.8 Vp-p (REC/P.B)
31	 210 mVp-p (REC)	56	 5.2 Vp-p (REC) 4.8 Vp-p (P.B)
32	 0.68 Vp-p (REC)		

VEFY007



VEFC009



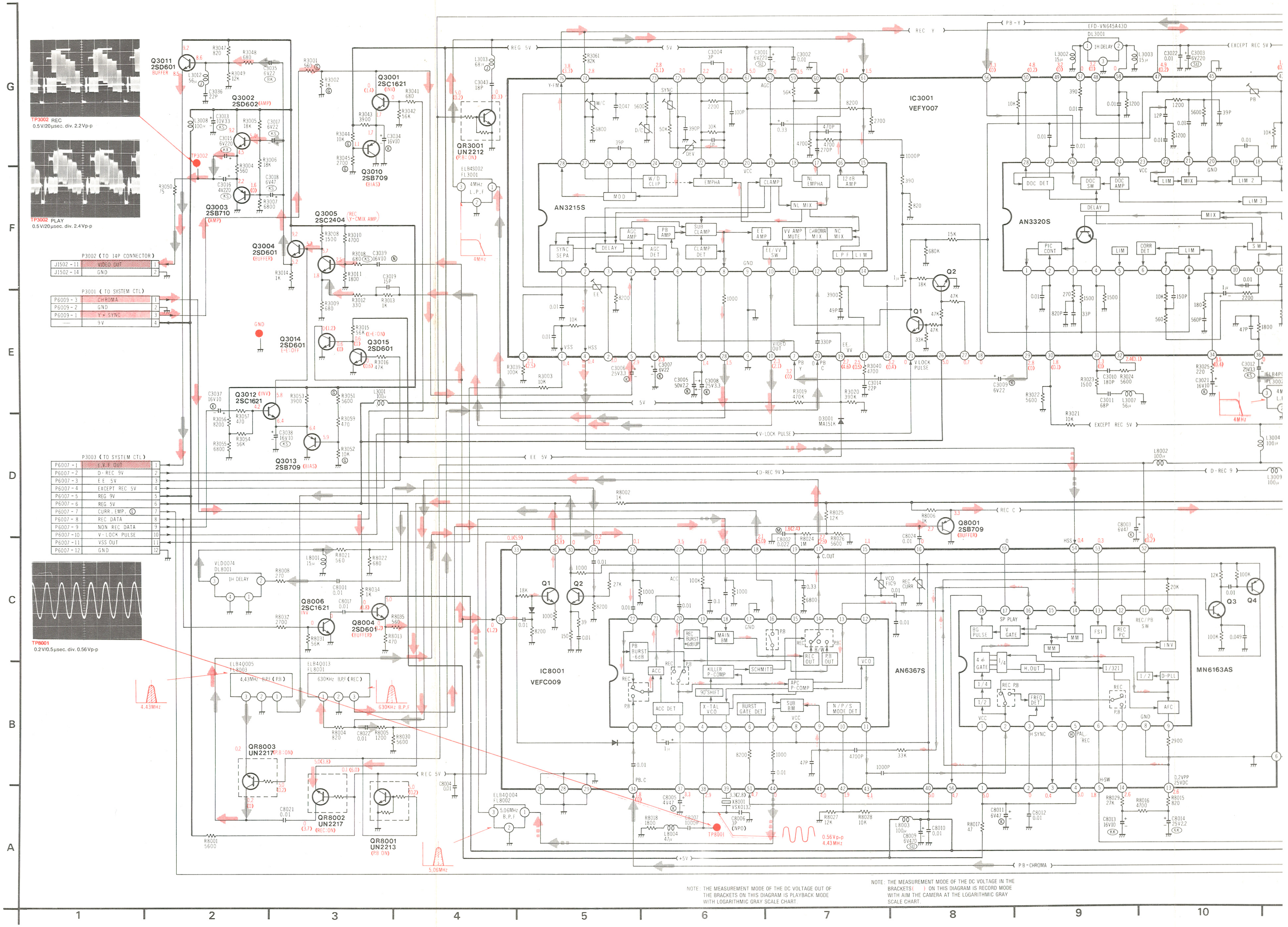
LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC

Transistor	
Q3001	G-3
Q3002	G-2
Q3003	F-2
Q3004	F-3
Q3005	F-3
Q3006	C-11
Q3007	B-11
Q3008	C-12
Q3009	B-12
Q3010	F-3
Q3011	G-2
Q3012	E-2
Q3013	E-3
Q3014	E-3
Q3015	E-3
Q5001	A-16
Q5002	A-15
Q5003	A-13
Q5004	A-15
Q5005	G-16
Q5006	G-15
Q5007	G-15
Q5010	F-16
Q5011	F-15
Q5012	F-15
Q5015	E-16
Q5016	E-15
Q5017	E-15
Q5020	D-15
Q5021	D-15
Q5022	E-15
Q8001	D-8
Q8004	C-3
Q8006	C-3
Transistor & Resistor	
QR3001	G-4
QR5001	G-14
QR5002	G-15
QR5003	F-14
QR5004	F-15
QR5005	E-14
QR5006	E-15
QR5007	D-14
QR5008	D-15
QR8001	A-1
QR8002	A-1
QR8003	B-2
Integrated Circuit	
IC3001	G-8
IC5001	C-17
IC8001	B-5
Test Point	
TP3001	B-15
TP3002	G-2
TP3003	C-15
TP3004	F-16
TP3005	A-12
TP8001	A-16
TP GND	E-2
Adjustment	
VR3001	G-12
VR5001	A-17
Connector	
P3001	F-1
P3002	F-1
P3003	D-1
P3004	E-12
P5001	E-17
P5002	E-13
P5003	G-13

ADDRESS INFORMATION

3-24. LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM

⇐ MAIN SIGNAL PATH IN REC MODE ⇐ MAIN SIGNAL PATH IN PLAYBACK MODE ⇐ 5.06MHz PHASE ROTATIONAL SIGNAL PATH IN REC MODE ⇐ 5.06



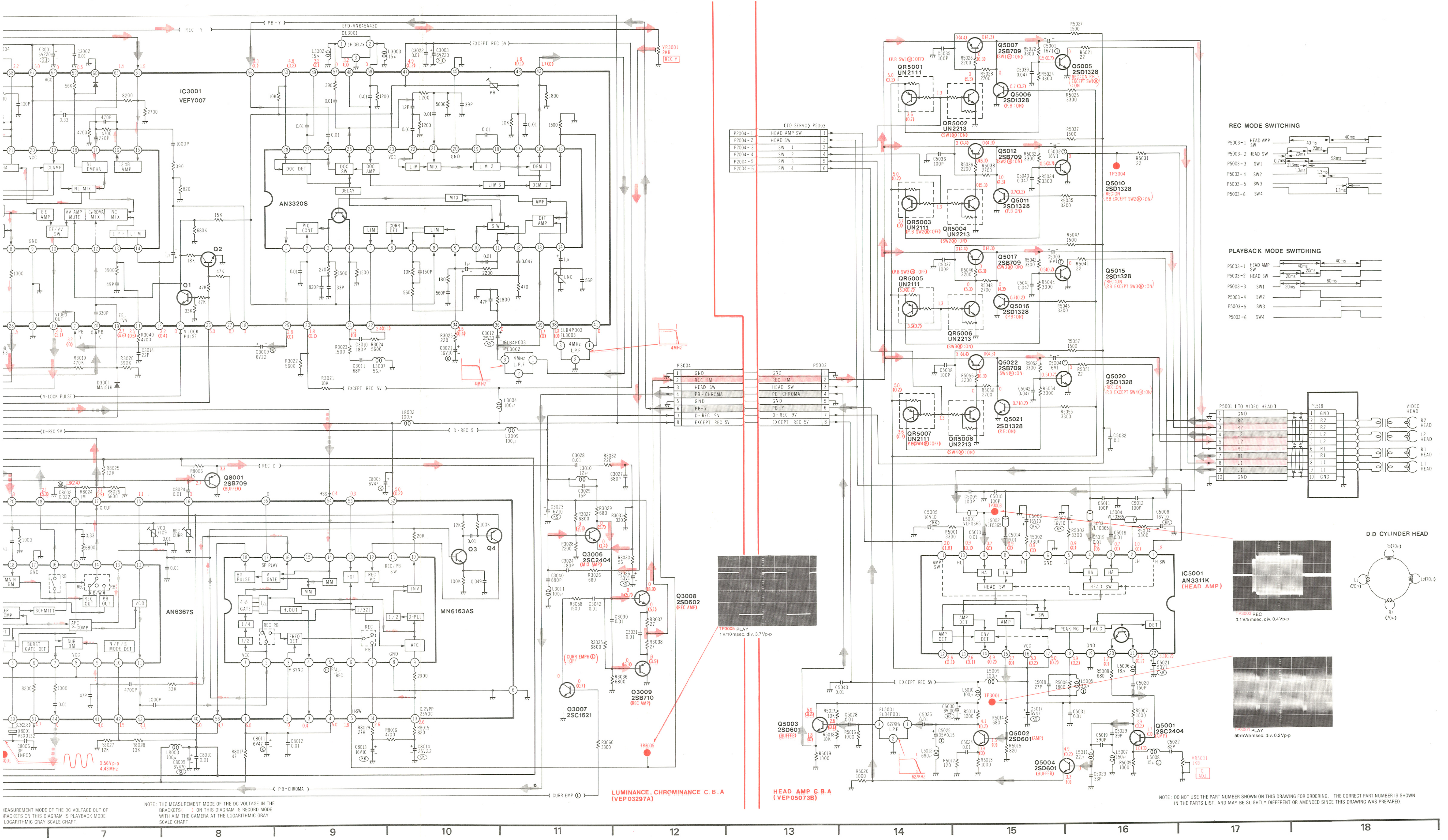
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
TP3002 REC
0.5V/20μsec. div. 2.2Vp-p
TP3002 PLAY
0.5V/20μsec. div. 2.4Vp-p
TP8001
0.2V/0.5μsec. div. 0.56Vp-p
Q3011 2SD601 BUFFER
Q3002 2SD602 (AMP)
Q3003 2SB710 (AMP)
Q3001 2SC1621
Q3010 2SB709 (BIAS)
Q3005 2SC2404 (REC Y-CMIX AMP)
Q3004 2SD601 (BUFFER)
Q3014 2SD601
Q3015 2SD601
Q3012 2SC1621
Q3013 2SB709 (BIAS)
QR3001 UN2212 (P.B ON)
IC3001 VEFY007
AN3215S
AN3320S
IC8001 VEFC009
AN6367S
MN6163AS
Q8001 2SB709 (BUFFER)
Q8006 2SC1621
Q8004 2SD601 (BUFFER)
QR8003 UN2217 (P.B ON)
QR8002 UN2217 (REC ON)
QR8001 UN2213 (PB ON)
P3002 (TO 14P CONNECTOR)
J1502-11 VIDEO OUT
J1502-14 GND
P3001 (TO SYSTEM CTL)
P6009-3 CHROMA
P6009-2 GND
P6009-1 Y+SYNC
9V
P3003 (TO SYSTEM CTL)
P6007-1 E.V.F OUT
P6007-2 D-REC 9V
P6007-3 E.E 5V
P6007-4 EXCEPT REC 5V
P6007-5 REG 9V
P6007-6 REG 5V
P6007-7 CURR. EMP.
P6007-8 REC DATA
P6007-9 NON REC DATA
P6007-10 V-LOCK PULSE
P6007-11 VSS OUT
P6007-12 GND
GND
4.43MHz
630KHz B.P.F
5.06MHz
4MHz
EL840005 FL8001 4.43MHz BPF (PB)
EL840013 FL8001 630KHz BPF (REC)
EL845002 FL3001 4MHz L.P.F
EL840004 FL8002 5.06MHz B.P.F
VLD0074 DL8001 1H DELAY
EFD-VN645A43D DL3001 1H DELAY
TP8001
0.56Vp-p 4.43MHz
REC Y
PB-Y
EXCEPT REC 5V
V-LOCK PULSE
EE 5V
D-REC 9V
REC C
REC 5V
+5V
PB-CHROMA

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH LOGARITHMIC GRAY SCALE CHART.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

RAM

K MODE ◄ 5.06MHz PHASE ROTATIONAL SIGNAL PATH IN REC MODE ◄ 5.06MHz PHASE ROTATIONAL SIGNAL PATH IN PLAYBACK MODE



IC3001
VEFY007
AN3320S
AN6367S
MN6163AS
IC5001
AN3311K
(HEAD AMP)
Q8001 2SB709 (BUFFER)
Q3006 2SC2404 (MIX AMP)
Q3007 2SC1621
Q3008 2SD602 (REC AMP)
Q3009 2SB710 (REC AMP)
Q5001 2SC2404 (AMP)
Q5002 2SD601 (AMP)
Q5003 2SD601 (BUFFER)
Q5004 2SD601 (BUFFER)
Q5005 2SD1328
Q5006 2SD1328
Q5007 2SB709
Q5010 2SD1328
Q5011 2SD1328
Q5012 2SB709
Q5015 2SD1328
Q5016 2SD1328
Q5017 2SB709
Q5020 2SD1328
Q5021 2SD1328
Q5022 2SB709
QR5001 UN2111
QR5002 UN2213
QR5003 UN2111
QR5004 UN2213
QR5005 UN2111
QR5006 UN2213
QR5007 UN2111
QR5008 UN2213
REC MODE SWITCHING
PLAYBACK MODE SWITCHING
P5003-1 HEAD AMP SW
P5003-2 HEAD SW
P5003-3 SW1
P5003-4 SW2
P5003-5 SW3
P5003-6 SW4
(TO SERVO) P5003
P3004
P5002
GND
REC FM
HEAD SW
PB-CHROMA
PB-Y
D-REC 9V
EXCEPT REC 5V
P5001 (TO VIDEO HEAD)
P1518
VIDEO HEAD
D.D CYLINDER HEAD
TP3005 PLAY 1V/10msec. div. 3.7Vp-p
TP3002 REC 0.1V/5msec. div. 0.4Vp-p
TP3001 PLAY 50mV/5msec. div. 0.2Vp-p
0.56Vp-p 4.43MHz
VR5001 1KB Q ADJ.
VR3001 2KB REC Y
LUMINANCE, CHROMINANCE C.B.A (VEP03297A)
HEAD AMP C.B.A (VEP05073B)
REC Y
PB-Y
REC C
PB-CHROMA
CURR EMP
V-LOCK PULSE
D-REC 9V
EXCEPT REC 5V
7
8
9
10
11
12
13
14
15
16
17
18

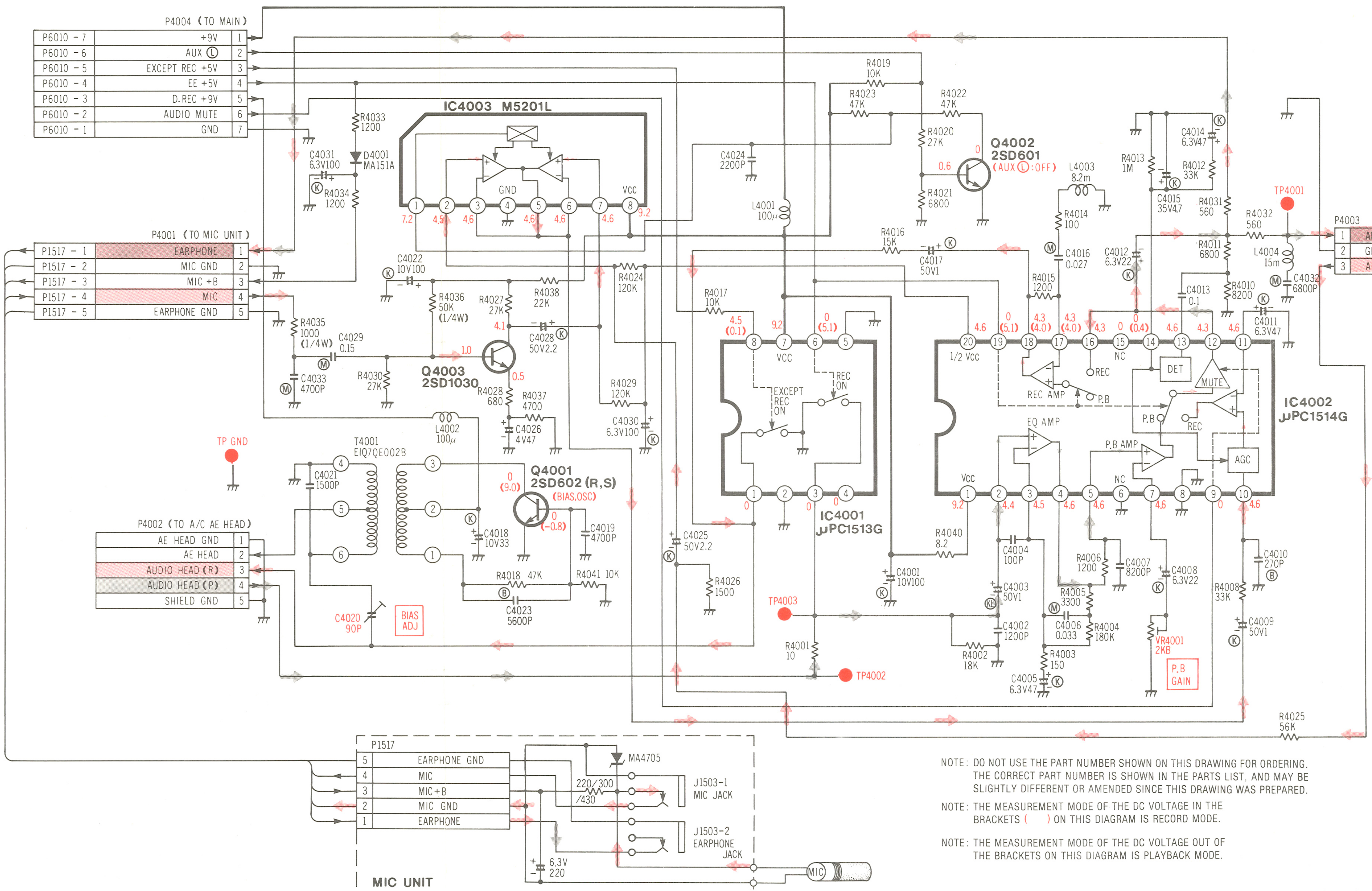
IEASUREMENT MODE OF THE DC VOLTAGE OUT OF
IRACKETS ON THIS DIAGRAM IS PLAYBACK MODE
LOGARITHMIC GRAY SCALE CHART.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST. AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-25. AUDIO SCHEMATIC DIAGRAM

MAIN SIGNAL PATH IN REC MODE   MAIN SIGNAL PATH IN PLAYBACK MODE



P4004 (TO MAIN)
P6010 - 7 +9V 1
P6010 - 6 AUX Ⓛ 2
P6010 - 5 EXCEPT REC +5V 3
P6010 - 4 EE +5V 4
P6010 - 3 D.REC +9V 5
P6010 - 2 AUDIO MUTE 6
P6010 - 1 GND 7
IC4003 M5201L
GND
VCC
R4033 1200
C4031 6.3V100
D4001 MA151A
R4034 1200
P4001 (TO MIC UNIT)
P1517 - 1 EARPHONE 1
P1517 - 2 MIC GND 2
P1517 - 3 MIC +B 3
P1517 - 4 MIC 4
P1517 - 5 EARPHONE GND 5
C4022 10V100
R4036 50K (1/4W)
R4027 27K
R4038 22K
R4024 120K
C4028 50V2.2
R4035 1000 (1/4W)
C4029 0.15
C4033 4700P
R4030 27K
Q4003 2SD1030
R4028 680
R4037 4700
C4026 4V47
R4029 120K
C4030 6.3V100
L4002 100μ
T4001 EIQ7QE002B
C4021 1500P
Q4001 2SD602 (R,S) (BIAS.OSC)
C4018 10V33
C4019 4700P
R4018 47K
R4041 10K
C4023 5600P
TP GND
P4002 (TO A/C AE HEAD)
AE HEAD GND 1
AE HEAD 2
AUDIO HEAD (R) 3
AUDIO HEAD (P) 4
SHIELD GND 5
C4020 90P
BIAS ADJ
C4024 2200P
L4001 100μ
R4017 10K
R4016 15K
C4017 50V1
R4019 10K
R4023 47K
R4022 47K
R4020 27K
R4021 6800
Q4002 2SD601 (AUX Ⓛ:OFF)
L4003 8.2m
R4014 100
R4013 1M
C4014 6.3V47
R4012 33K
C4015 35V4.7
R4031 560
R4032 560
TP4001
C4016 0.027
C4012 6.3V22
R4015 1200
R4011 6800
L4004 15m
C4013 0.1
R4010 8200
C4032 6800P
C4011 6.3V47
P4003 (TO 14P CONNECTOR)
1 AUDIO OUT J1502 - 12
2 GND J1502 - 13
3 AUDIO IN J1502 - 5
IC4001 μPC1513G
VCC
EXCEPT REC ON
REC ON
C4025 50V2.2
R4026 1500
TP4003
R4001 10
TP4002
C4001 10V100
R4040 8.2
IC4002 μPC1514G
1/2 VCC
REC AMP
REC
P.B
EQ AMP
P.B AMP
DET
MUTE
AGC
NC
C4004 100P
C4003 50V1
C4002 1200P
R4002 18K
R4006 1200
C4007 8200P
R4005 3300
C4006 0.033
R4004 180K
R4003 150
C4005 6.3V47
C4008 6.3V22
VR4001 2KB
P.B GAIN
R4008 33K
C4010 270P
C4009 50V1
R4025 56K
P1517
5 EARPHONE GND
4 MIC
3 MIC+B
2 MIC GND
1 EARPHONE
MA4705
220/300 /430
J1503-1 MIC JACK
J1503-2 EARPHONE JACK
6.3V 220
MIC
MIC UNIT

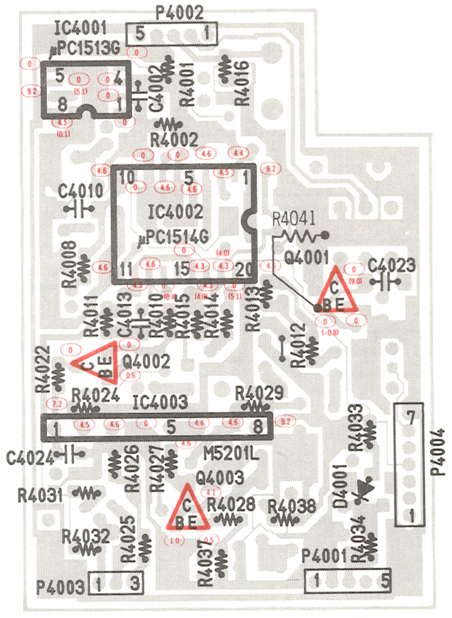
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.

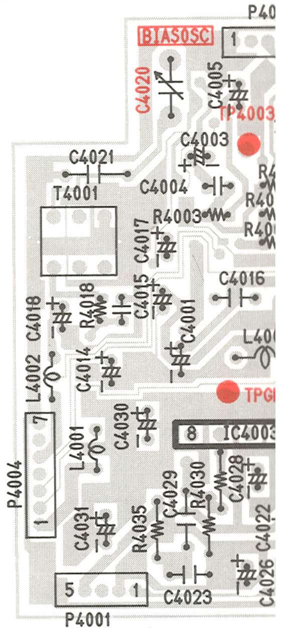
3-26. AUDIO CIRCUIT BOARD (VEP04

AUDIO CIRCUIT BOARD (VEP04131B)



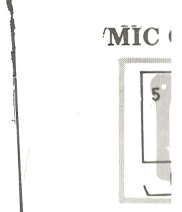
IC4001 μPC1513G
P4002
C4002
R4001
R4016
R4002
C4010
IC4002 μPC1514G
R4041
Q4001
C4023
R4008
R4011
R4013
R4014
R4012
R4022
Q4002
R4024
IC4003
R4029
C4024
M5201L
Q4003
R4031
R4026
R4027
R4028
R4038
R4032
R4025
R4033
D4001
R4034
P4004
P4001
P4003

(FOIL SIDE)

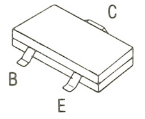


P40
BIASOSC
C4020
C4005
TP4003
C4003
C4021
T4001
C4004
R4003
C4017
C4015
C4001
C4016
R4018
C4014
L4002
C4018
L400
TP
C4031
L4001
C4030
R4035
R4029
R4030
IC4003
C4022
C4026
P4006
C4023
P4001

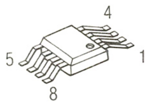
(COMPON



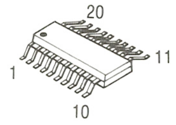
ICs & TRANSISTORs INFORMATION



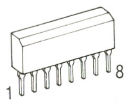
2SD602
2SD601
2SD1030



μPC1513G



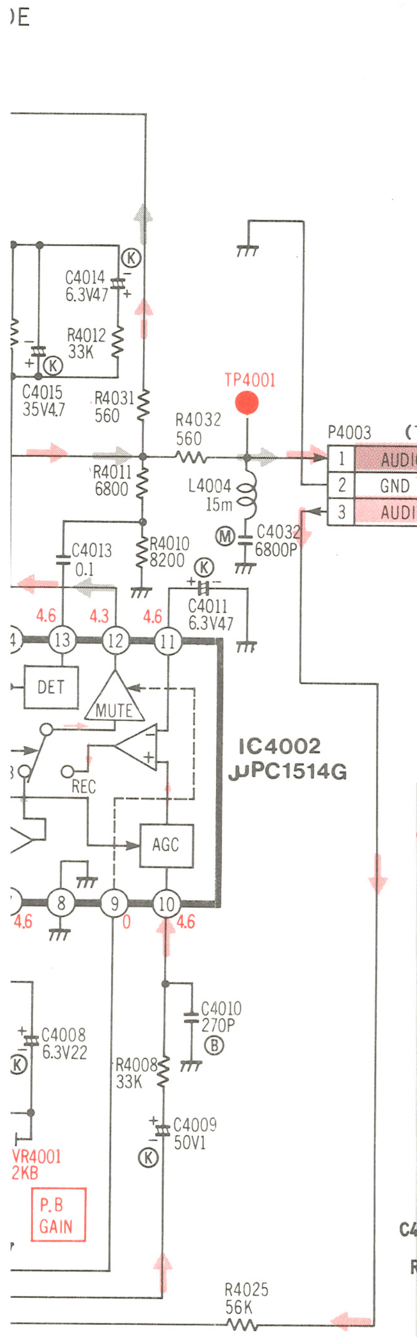
μPC1514G



M5201L

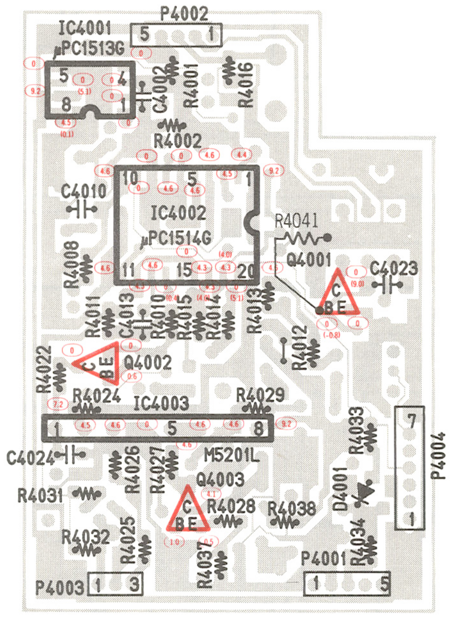
Back Page:
LUMINANCE, CHROMINANCE &
HEAD AMP Section

E

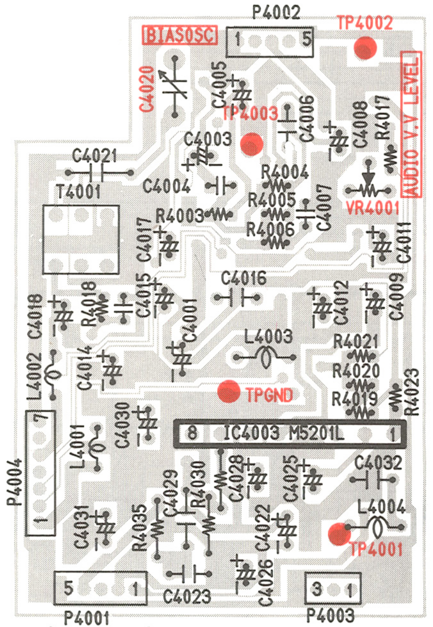

C4014
6.3V47
R4012
33K
C4015
35V4.7
R4031
560
TP4001
R4032
560
R4011
6800
L4004
15m
C4032
6800P
C4013
0.1
R4010
8200
C4011
6.3V47
4.6
4.3
4.6
13
12
11
DET
MUTE
REC
AGC
IC4002
µPC1514G
8
9
10
4.6
0
4.6
C4008
6.3V22
R4008
33K
C4010
270P
C4009
50V1
VR4001
2KB
P.B
GAIN
R4025
56K
P4003 (TO 14P CONNECTOR)
1 AUDIO OUT J1502 - 12
2 GND J1502 - 13
3 AUDIO IN J1502 - 5

3-26. AUDIO CIRCUIT BOARD (VEP04131B)

AUDIO CIRCUIT BOARD (VEP04131B)


IC4001
µPC1513G
P4002
R4002
C4010
IC4002
µPC1514G
R4041
Q4001
C4023
Q4002
R4022
R4024
IC4003
R4029
C4024
M5201L
Q4003
R4031
R4028
R4038
D4001
R4032
P4001
P4003
P4004

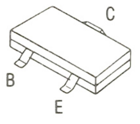
(FOIL SIDE)


BIAS OSC
P4002
TP4002
C4020
TP4003
C4003
C4021
T4001
C4004
R4004
R4005
R4006
R4003
VR4001
AUDIO V.V LEVEL
C4017
C4016
L4003
R4021
R4020
R4019
TPGND
L4002
L4001
IC4003 M5201L
C4032
L4004
TP4001
P4004
P4001
C4023
P4003

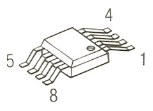
(COMPONENT SIDE)

ON THIS DRAWING FOR ORDERING.
IN THE PARTS LIST, AND MAY BE
E THIS DRAWING WAS PREPARED.
OLTAGE IN THE
RECORD MODE.
OLTAGE OUT OF
AYBACK MODE.

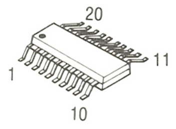
ICs & TRANSISTORs INFORMATION



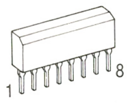
2SD602
2SD601
2SD1030



µPC1513G

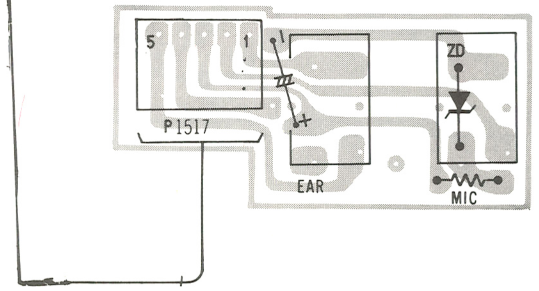


µPC1514G



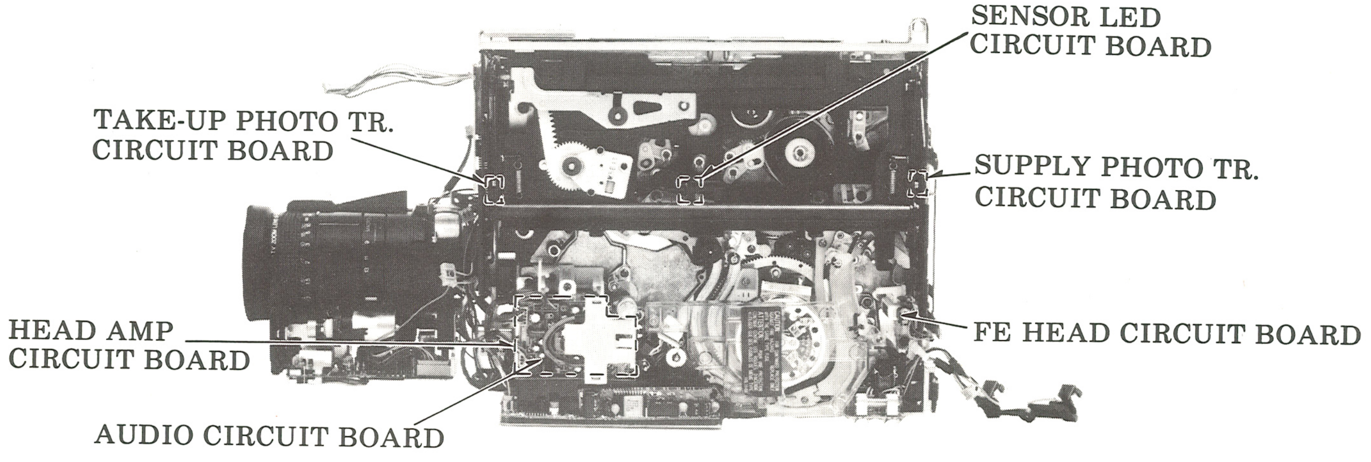
M5201L

MIC CIRCUIT BOARD (VJB04123)

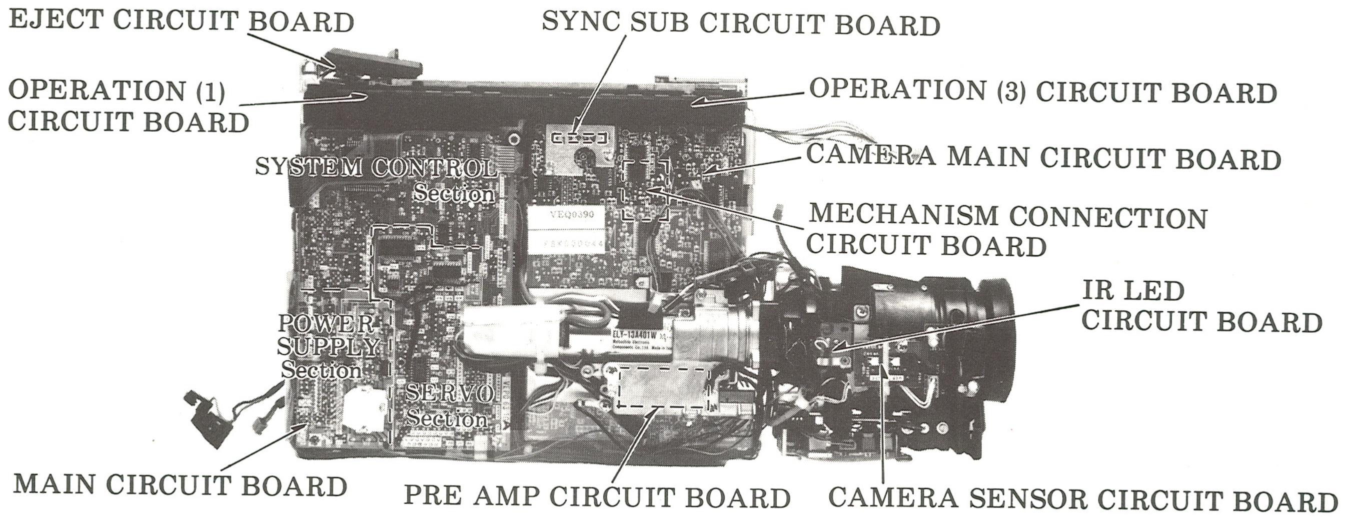

5
1
P1517
ZD
EAR
MIC

3-27. CIRCUIT BOARD LAYOUT

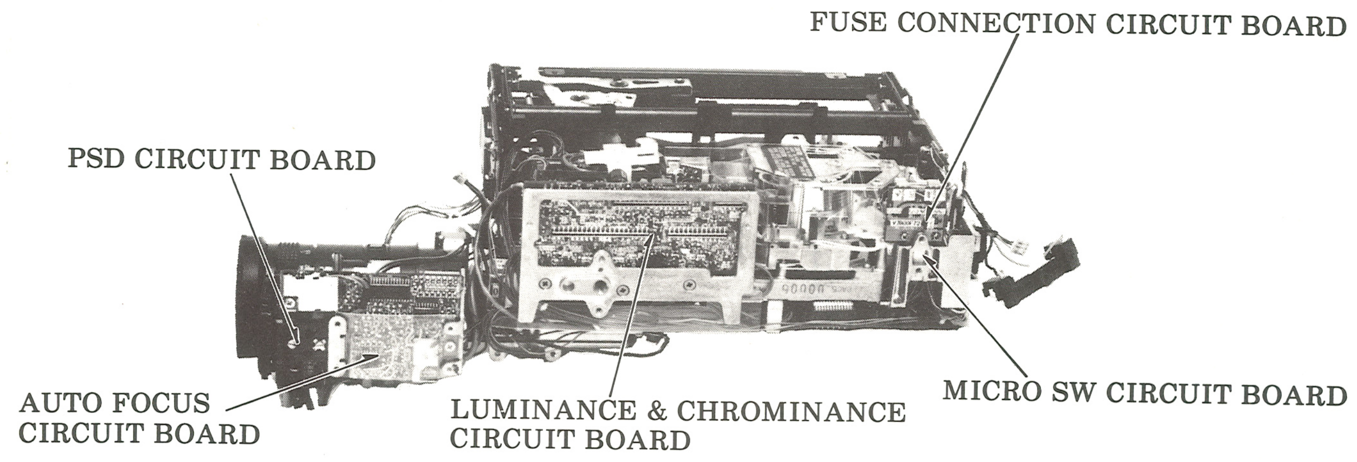
TOP VIEW


SENSOR LED CIRCUIT BOARD
TAKE-UP PHOTO TR. CIRCUIT BOARD
SUPPLY PHOTO TR. CIRCUIT BOARD
HEAD AMP CIRCUIT BOARD
FE HEAD CIRCUIT BOARD
AUDIO CIRCUIT BOARD

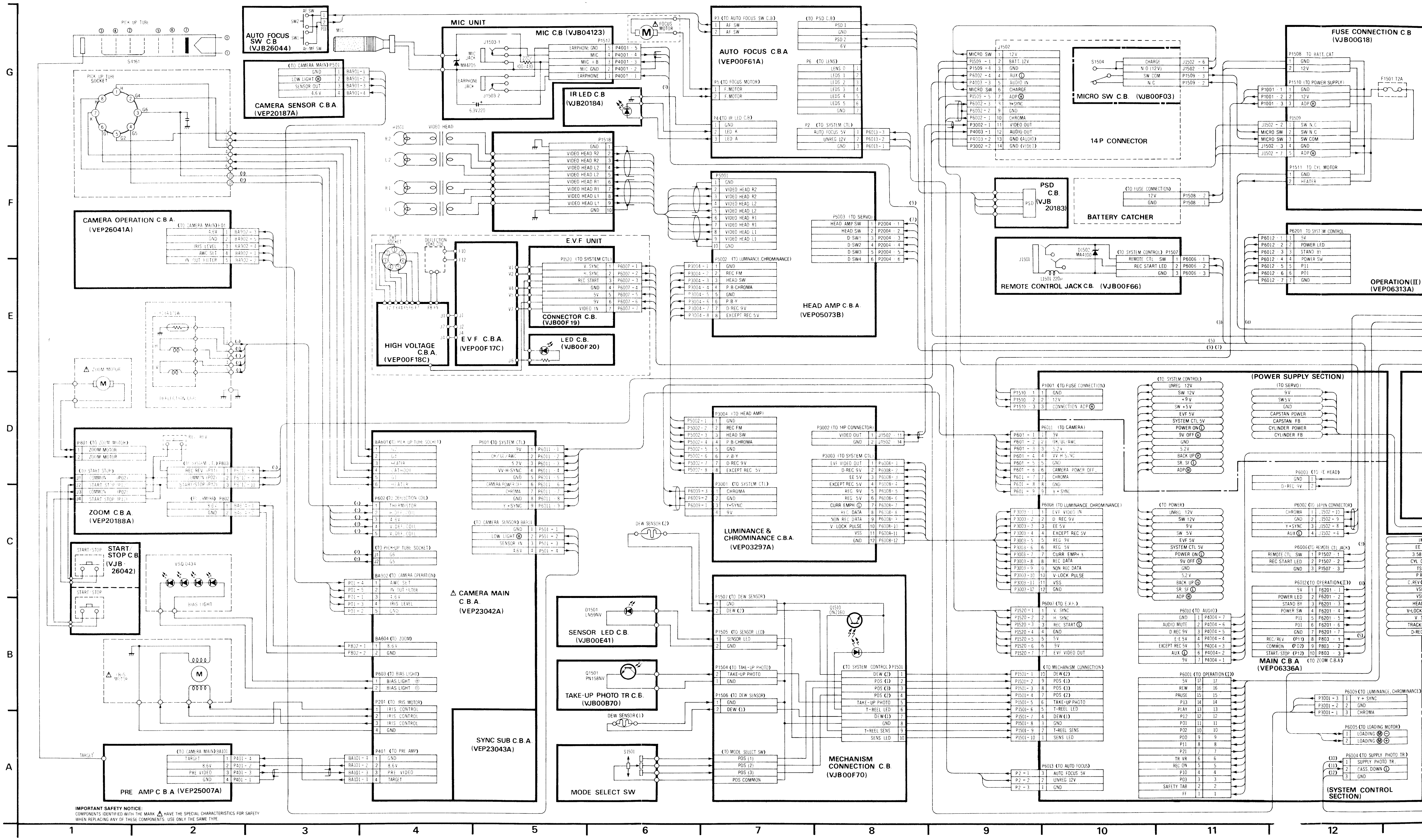
BOTTOM VIEW


EJECT CIRCUIT BOARD
SYNC SUB CIRCUIT BOARD
OPERATION (1) CIRCUIT BOARD
OPERATION (3) CIRCUIT BOARD
CAMERA MAIN CIRCUIT BOARD
SYSTEM CONTROL Section
MECHANISM CONNECTION CIRCUIT BOARD
IR LED CIRCUIT BOARD
POWER SUPPLY Section
SERVO Section
MAIN CIRCUIT BOARD
PRE AMP CIRCUIT BOARD
CAMERA SENSOR CIRCUIT BOARD

REAR VIEW


FUSE CONNECTION CIRCUIT BOARD
PSD CIRCUIT BOARD
AUTO FOCUS CIRCUIT BOARD
LUMINANCE & CHROMINANCE CIRCUIT BOARD
MICRO SW CIRCUIT BOARD

INTERCONNECTION SCHEMATIC DIAGRAM


AUTO FOCUS SW C.B (VJB26044)
CAMERA SENSOR C.B.A. (VEP20187A)
MIC UNIT
MIC C.B (VJB04123)
IR LED C.B (VJB20184)
AUTO FOCUS C.B.A (VEP00F61A)
FOCUS MOTOR
MICRO SW C.B. (VJB00F03)
14 P CONNECTOR
FUSE CONNECTION C.B (VJB00G18)
PSD C.B. (VJB 20183)
BATTERY CATCHER
REMOTE CONTROL JACK C.B. (VJB00F66)
OPERATION(II) (VEP06313A)
CAMERA OPERATION C.B.A. (VEP26041A)
E.V.F UNIT
CONNECTOR C.B. (VJB00F19)
HIGH VOLTAGE C.B.A. (VEP00F18C)
E.V.F C.B.A. (VEP00F17C)
LED C.B. (VJB00F20)
HEAD AMP C.B.A. (VEP05073B)
ZOOM MOTOR
ZOOM C.B.A. (VEP20188A)
START/STOP C.B (VJB 26042)
CAMERA MAIN C.B.A. (VEP23042A)
SYNC SUB C.B.A. (VEP23043A)
LUMINANCE & CHROMINANCE C.B.A. (VEP03297A)
SENSOR LED C.B. (VJB00E41)
TAKE-UP PHOTO TR C.B. (VJB00B70)
MODE SELECT SW
MECHANISM CONNECTION C.B. (VJB00F70)
DEW SENSOR (1)
DEW SENSOR (2)
(POWER SUPPLY SECTION)
MAIN C.B.A (VEP06336A)
(SYSTEM CONTROL SECTION)
PRE AMP C.B.A (VEP25007A)
IRIS MOTOR
G
F
E
D
C
B
A
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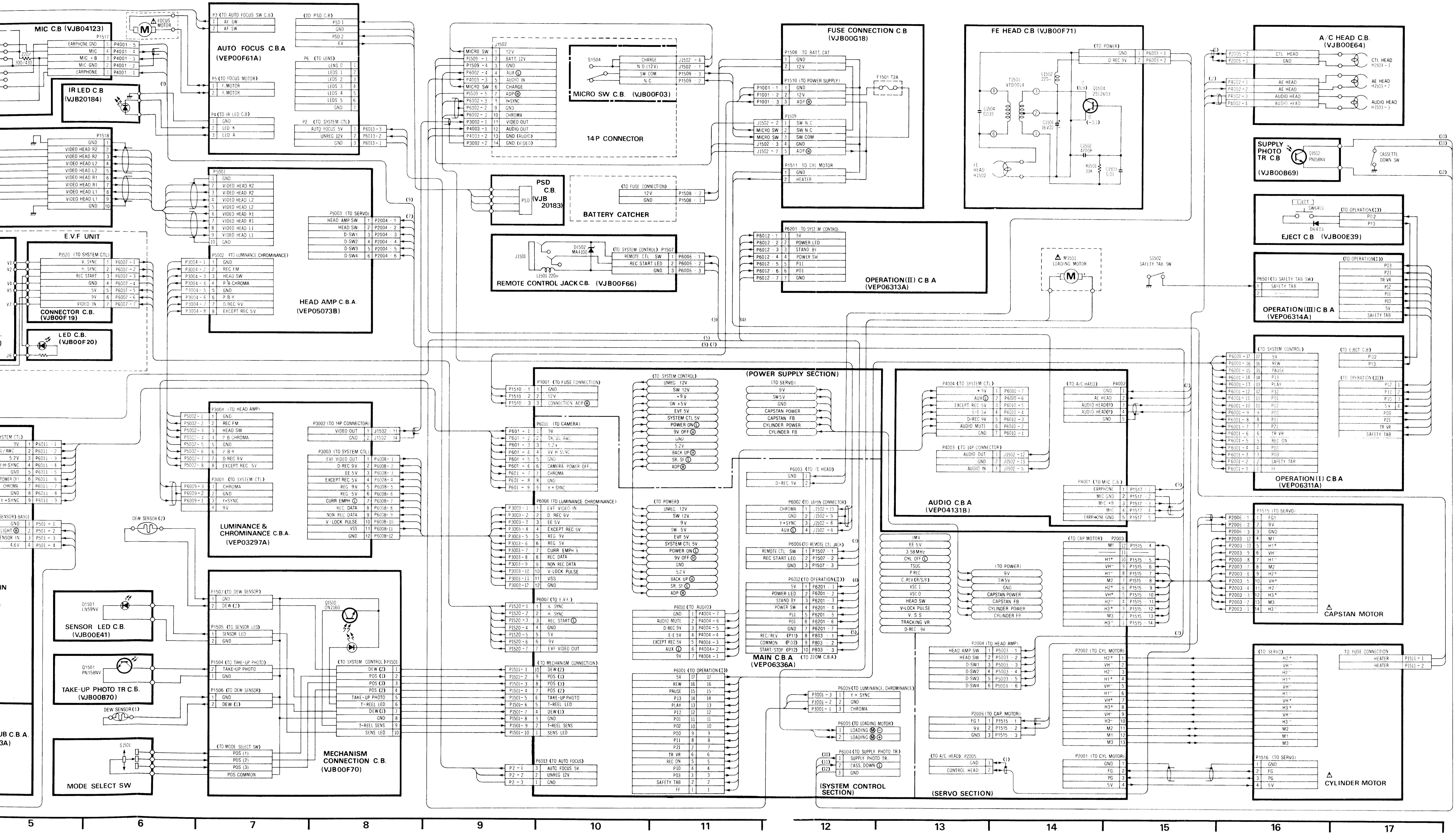
12

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.


MIC C.B (VJB04123)
IR LED C.B (VJB20184)
AUTO FOCUS C.B.A. (VEP00F61A)
FOCUS MOTOR
E.V.F UNIT
CONNECTOR C.B. (VJB00F19)
LED C.B. (VJB00F20)
HEAD AMP C.B.A. (VEP05073B)
14P CONNECTOR
MICRO SW C.B. (VJB00F03)
PSD C.B. (VJB 20183)
BATTERY CATCHER
REMOTE CONTROL JACK C.B. (VJB00F66)
FUSE CONNECTION C.B (VJB00G18)
OPERATION(II) C.B.A (VEP06313A)
FE HEAD C.B (VJB00F71)
A/C HEAD C.B. (VJB00E64)
CTL HEAD H1503-1
AE HEAD H1503-2
AUDIO HEAD H1503-3
SUPPLY PHOTO TR C.B (VJB00B69)
CASSETTE DOWN SW
EJECT C.B (VJB00E39)
M1501 LOADING MOTOR
S1502 SAFETY TAB SW
OPERATION(III)C.B.A (VEP06314A)
OPERATION(I) C.B.A (VEP06311A)
LUMINANCE & CHROMINANCE C.B.A. (VEP03297A)
DEW SENSOR (2)
DEW SENSOR (1)
SENSOR LED C.B. (VJB00E41)
TAKE-UP PHOTO TR C.B. (VJB00B70)
MODE SELECT SW
MECHANISM CONNECTION C.B. (VJB00F70)
(POWER SUPPLY SECTION)
MAIN C.B.A (VEP06336A)
(SYSTEM CONTROL SECTION)
(SERVO SECTION)
AUDIO C.B.A (VEP04131B)
CAPSTAN MOTOR
CYLINDER MOTOR
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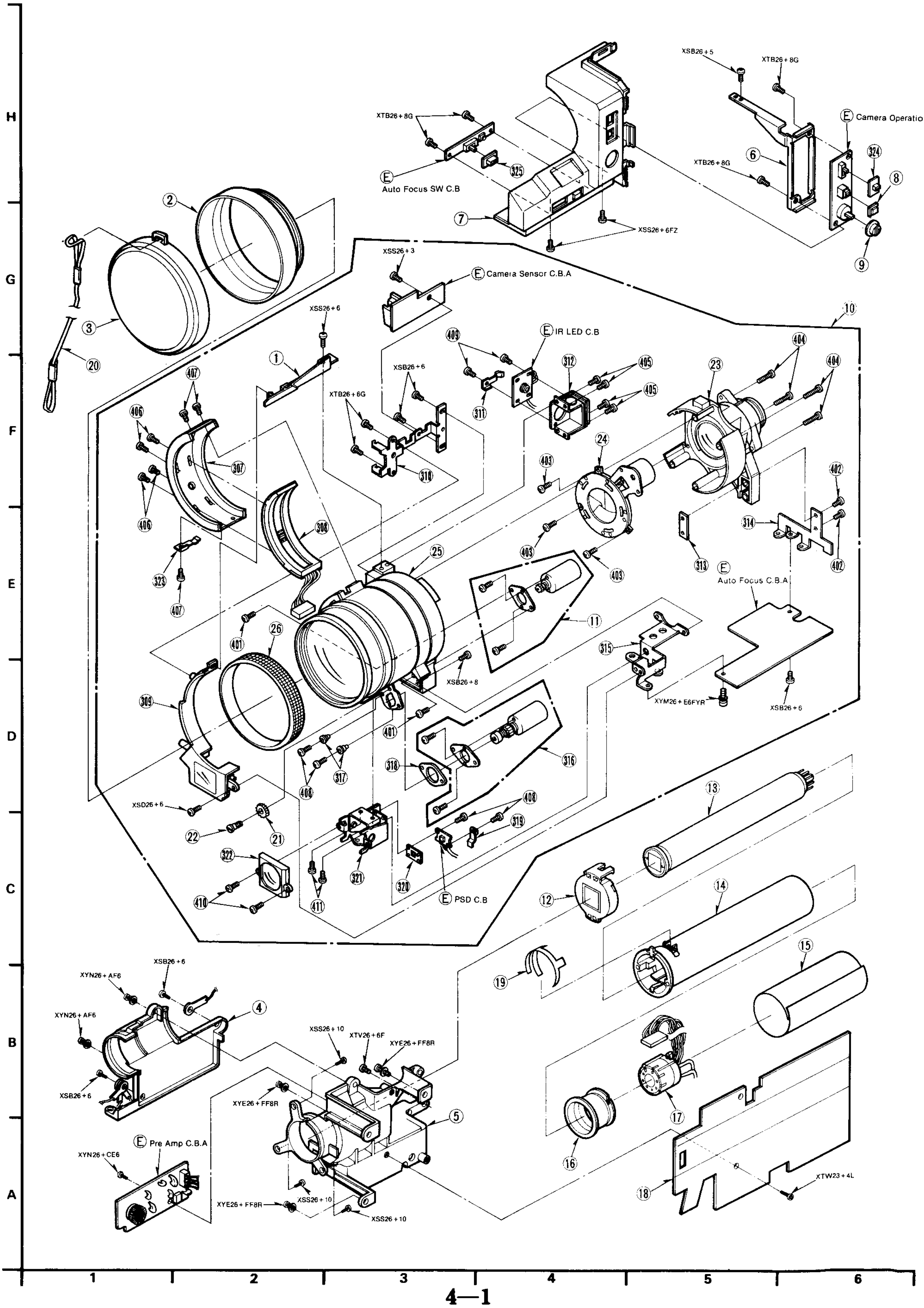
17

SECTION 4.

EXPLODED VIEWS AND PARTS LIST

4-1. EXPLODED VIEW

❶ LENS SECTION


H
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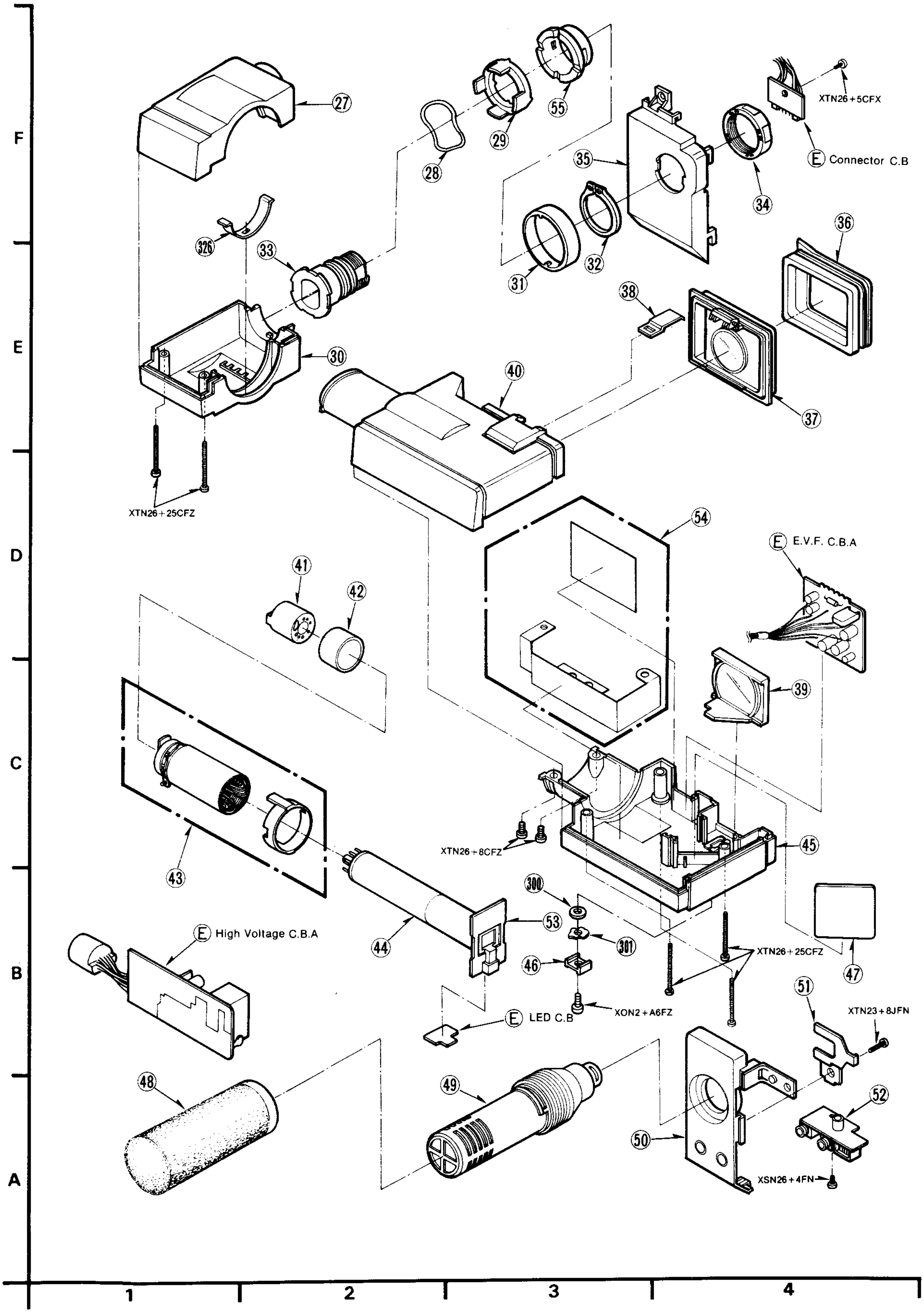
C
B
A
1
2
3
4
5
6
XSB26+5
XTB26+8G
XTB26+8G
Ⓔ Camera Operation C.B.A
324
8
9
6
XTB26+8G
325
Ⓔ Auto Focus SW C.B
7
XSS26+6FZ
2
3
20
XSS26+3
Ⓔ Camera Sensor C.B.A
10
XSS26+6
1
409
Ⓔ IR LED C.B
312
405
405
23
404
404
407
406
406
XSB26+6
XTB26+6G
311
310
24
307
403
403
403
402
402
314
313
Ⓔ Auto Focus C.B.A
308
25
323
407
11
26
401
XSB26+8
315
XYM26+E6FYR
XSB26+6
309
401
316
408
317
318
XSD26+6
22
21
408
319
322
321
320
Ⓔ PSD C.B
410
411
13
12
14
19
15
XSB26+6
XYN26+AF6
XYN26+AF6
4
XSB26+6
XSS26+10
XTV26+6F
XYE26+FF8R
XYE26+FF8R
5
Ⓔ Pre Amp C.B.A
XYN26+CE6
XYE26+FF8R
XSS26+10
XSS26+10
16
17
18
XTW23+4L

❷ ELECTRONIC VIEW FINDER (E.V.F) & MICROPHONE SECTION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A
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3
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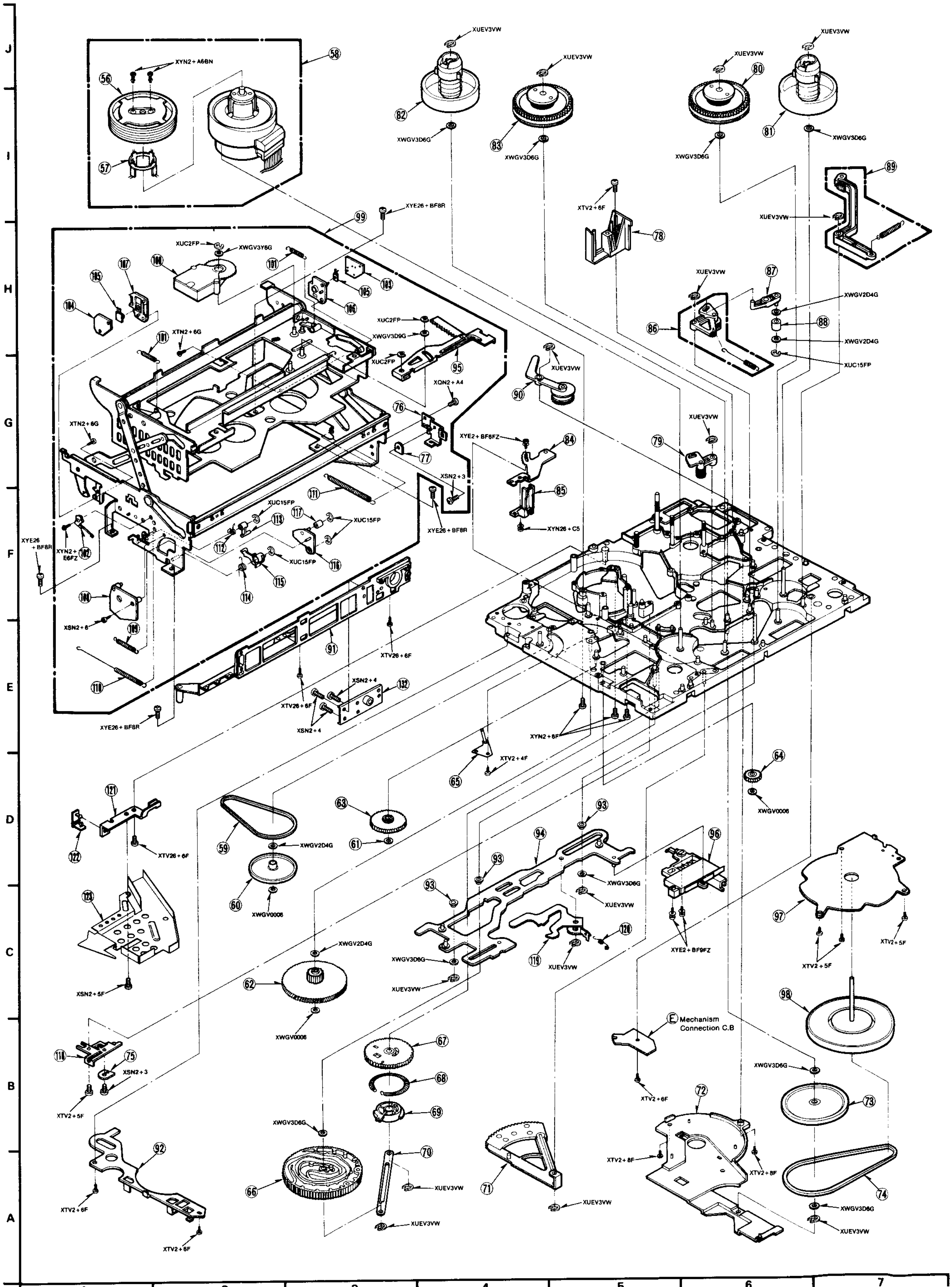
(55)
㉙
㉘
XTN26+5CFX
Ⓔ Connector C.B
㉟
㉞
㊱
(326)
㉝
㉛
㉜
㊳
㉚
㊵
㊲
XTN26+25CFZ
(54)
Ⓔ E.V.F. C.B.A
㊶
㊷
㊴
㊸
XTN26+8CFZ
㊺
(300)
(53)
㊹
(301)
XTN26+25CFZ
㊼
Ⓔ High Voltage C.B.A
㊻
(51)
XTN23+8JFN
Ⓔ LED C.B
XON2+A6FZ
㊽
㊾
(52)
㊿
XSN26+4FN

❸ MECHANISM (1) SECTION


J
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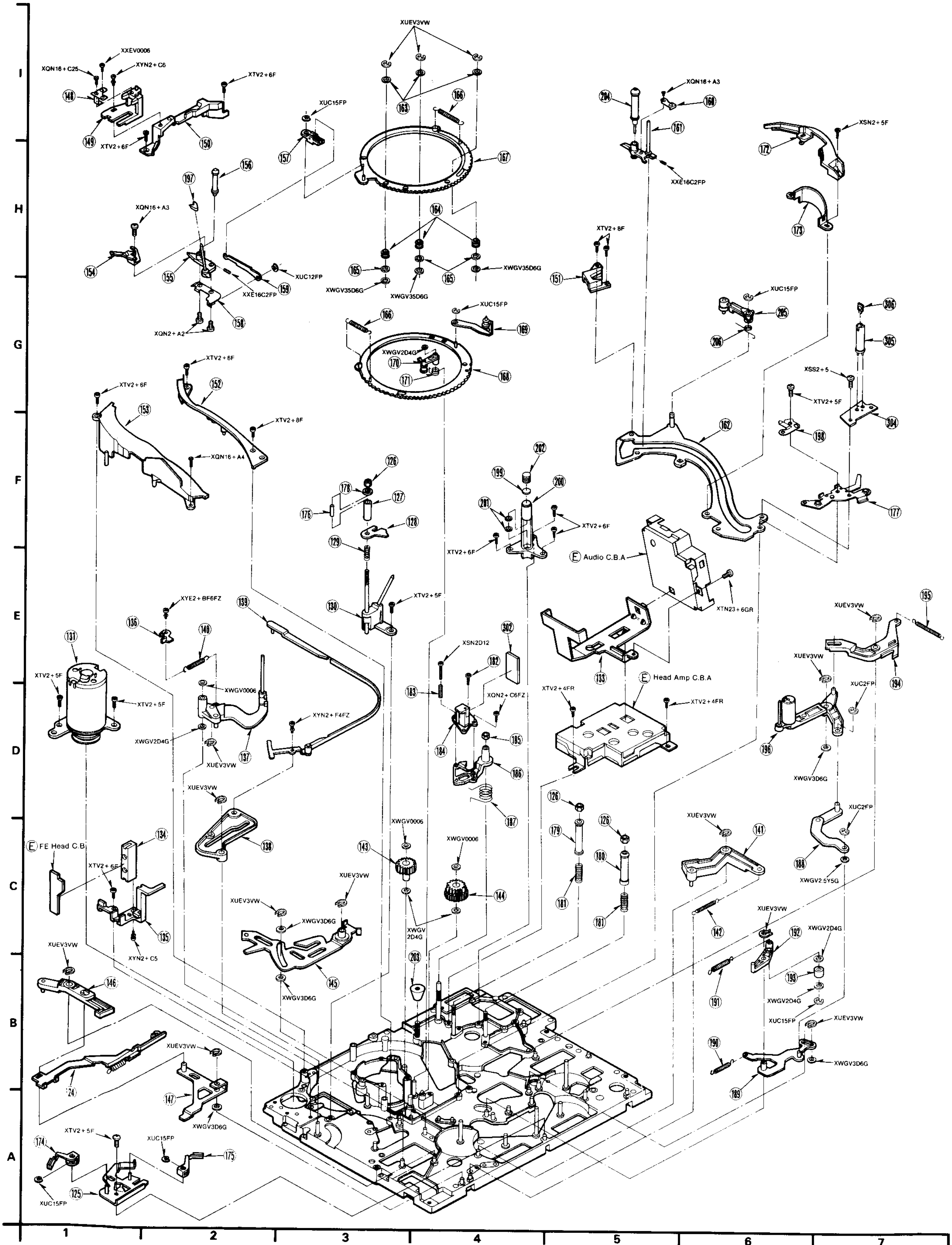
4
5
6
7
58
XYN2+A6BN
56
57
XUEV3VW
82
XWGV3D6G
83
80
81
89
XTV2+6F
78
99
XYE26+BF8R
XUC2FP
XWGV3Y6G
100
101
103
104
105
107
106
XTN2+6G
101
XUC2FP
XWGV3D9G
95
XQN2+A4
76
77
90
84
XYE2+BF6FZ
85
XYN26+C5
XSN2+3
111
XUC15FP
113
117
112
116
115
114
102
XYE26+BF8R
XYN2+E6FZ
108
XSN2+6
109
110
91
XTV26+6F
132
XSN2+4
XTV26+6F
XSN2+4
XYE26+BF8R
86
87
88
XWGV2D4G
XUC15FP
79
XYN2+8F
65
XTV2+4F
64
XWGV0006
121
122
XTV26+6F
123
XSN2+5F
59
60
XWGV2D4G
XWGV0006
63
61
93
94
XWGV3D6G
XUEV3VW
96
XYE2+BF9FZ
97
XTV2+5F
120
119
62
98
Ⓔ Mechanism Connection C.B
118
75
XSN2+3
XTV2+5F
67
68
69
70
66
71
72
73
74
92
XTV2+6F
XTV2+8F

❹ MECHANISM (2) SECTION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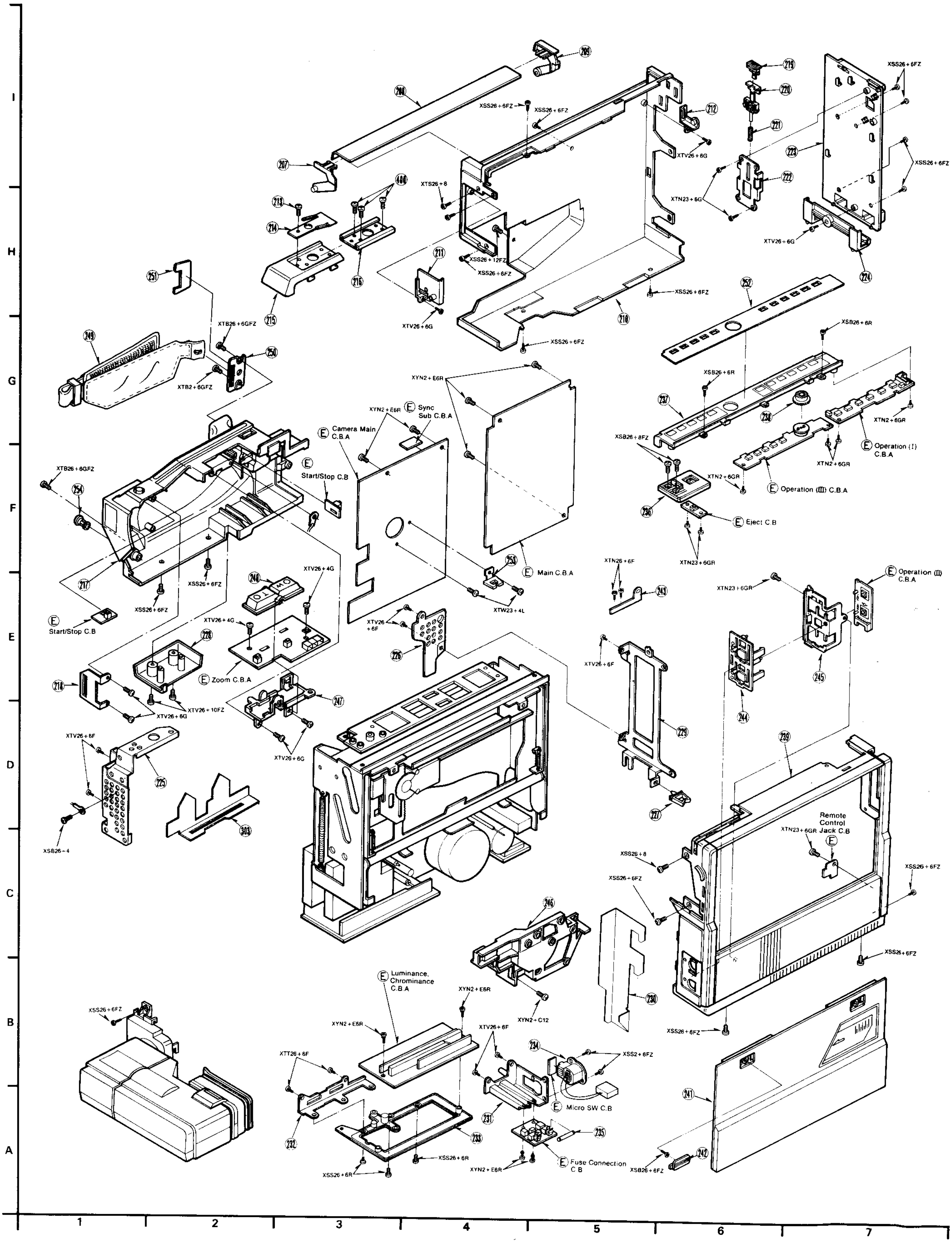
5
6
7
XUEV3VW
XXEV0006
XQN16+C25
XYN2+C6
XTV2+6F
148
149
XTV2+6F
150
XUC15FP
157
163
166
167
204
XQN16+A3
160
161
XXE16C2FP
XSN2+5F
172
173
156
197
XQN16+A3
154
155
XXE16C2FP
159
XUC12FP
158
XQN2+A2
164
165
XWGV35D6G
165
XWGV35D6G
XWGV35D6G
XTV2+8F
151
XUC15FP
205
206
306
305
166
XUC15FP
169
XWGV2D4G
170
171
168
XTV2+6F
152
XTV2+6F
153
XTV2+8F
XQN16+A4
XSS2+5
XTV2+5F
198
304
162
126
202
199
200
178
127
176
128
201
XTV2+6F
129
XTV2+6F
177
Ⓔ Audio C.B.A
XTN23+6GR
130
XTV2+5F
XYE2+8F6FZ
139
136
140
131
XTV2+5F
XTV2+5F
XWGV0006
XWGV2D4G
137
XUEV3VW
XYN2+F4FZ
XSN2D12
302
182
183
XQN2+C6FZ
184
185
186
187
133
Ⓔ Head Amp C.B.A
XTV2+4FR
XTV2+4FR
195
XUEV3VW
194
XUEV3VW
XUC2FP
196
XWGV3D6G
XUEV3VW
138
134
Ⓔ FE Head C.B
XTV2+6F
135
XYN2+C5
XWGV0006
143
XWGV0006
144
126
179
126
180
181
181
XUEV3VW
141
188
XUC2FP
XWGV2.5Y5G
XUEV3VW
XUEV3VW
XWGV3D6G
145
XWGV3D6G
XWGV 2D4G
203
142
XUEV3VW
192
XWGV2D4G
193
191
XWGV2D4G
XUC15FP
XUEV3VW
190
XWGV3D6G
189
XUEV3VW
146
124
XUEV3VW
147
XWGV3D6G
XTV2+5F
174
XUC15FP
175
125
XUC15FP

❺ CHASSIS & FRAME SECTION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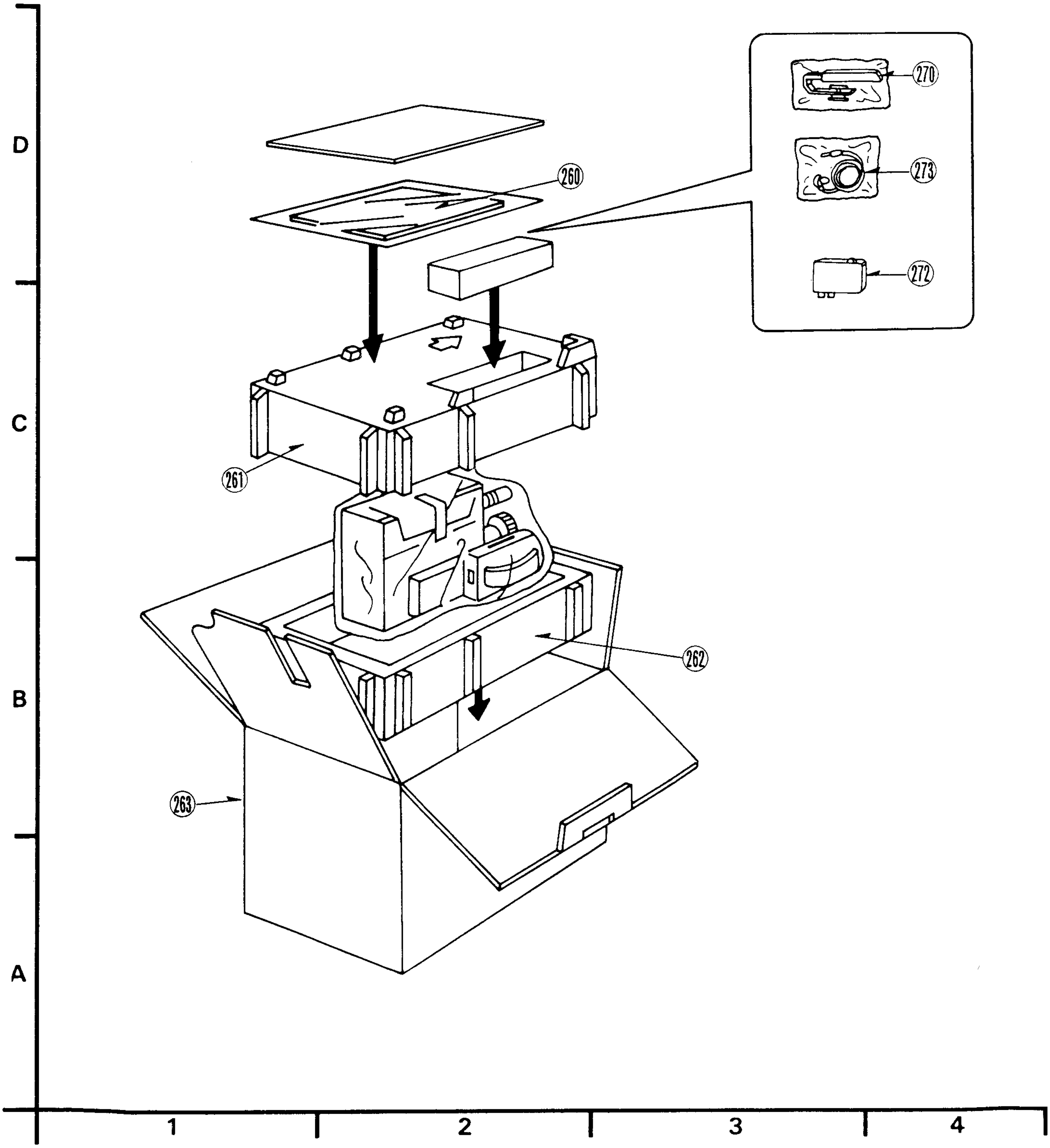
(209)
(208)
XSS26+6FZ
XSS26+6FZ
(212)
XTV26+6G
(219)
(220)
(221)
XSS26+6FZ
(223)
(222)
XSS26+6FZ
XTN23+6G
XTV26+6G
(224)
(207)
(400)
XTS26+8
(213)
(214)
(216)
(215)
(211)
XSS26+12FZ
XSS26+6FZ
XTV26+6G
XSS26+6FZ
(210)
XSS26+6FZ
(251)
XTB26+6GFZ
(250)
XTB2+6GFZ
(249)
(252)
XSB26+6R
XSB26+6R
(237)
(238)
XTN2+6GR
Operation (I) C.B.A
XTN2+6GR
XSB26+8FZ
XTN2+6GR
Operation (III) C.B.A
(236)
Eject C.B
XTN23+6GR
XYN2+E6R
XYN2+E6R
Sync Sub C.B.A
Camera Main C.B.A
Start/Stop C.B
XTB26+6GFZ
(254)
(217)
XSS26+6FZ
XSS26+6FZ
Start/Stop C.B
(253)
Main C.B.A
XTW23+4L
XTN26+6F
(243)
XTN23+6GR
Operation (II) C.B.A
(245)
(244)
(248)
XTV26+4G
XTV26+4G
(228)
Zoom C.B.A
XTV26+6F
(226)
XTV26+6F
(229)
(218)
XTV26+6G
XTV26+10FZ
(247)
XTV26+6G
XTV26+6F
(225)
XSB26-4
(303)
(227)
(239)
Remote Control Jack C.B
XTN23+6GR
XSS26+8
XSS26+6FZ
XSS26+6FZ
(246)
XSS26+6FZ
Luminance, Chrominance C.B.A
XYN2+E6R
XYN2+C12
(230)
XSS26+6FZ
XSS26+6FZ
XYN2+E6R
XTV26+6F
(234)
XSS2+6FZ
XTT26+6F
Micro SW C.B
(241)
(232)
(233)
(231)
(235)
XSS26+6R
XSS26+6R
XYN2+E6R
Fuse Connection C B
XSB26+6FZ
(242)

❻ PACKING PARTS SECTION


D
C
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260
261
262
263
270
273
272